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The History of Civilization

by V. GORDON CHILDE

HISTORY OF CIVILIZATION. By Hutton Webster, Stanford University. Boston : D. C. Heath and Company, 1940. pp. XX, 1052, 32 plates, maps, plans, and text-illustrations. 4 dollars 50 cents.

THE fruits of specialists' studies on particular phases and incidents in humanity's past have come to fill oppressive rows of periodicals and monographs in every city and university library, not to mention the even drearier cases in a thousand museums. What is the use of this accumulation of snippets, if one cannot extract from them a comprehensive view of what has actually happened, of man's enduring achievement on this planet. In composite histories like the Cambridge series, or Harmsworth's, experts have cooperated, more or less harmoniously, in condensing this indigestible mass. Few bold spirits have followed H. G. Wells in attempting to popularize it as an individual's synthetic view. Yet such works of vulgarization are surely necessary if the results of historical research are to have any wide appeal. Such must naturally be compilations in that the author will have to marshal other people's conclusions, instead of devoting his time to the more exciting task of original research among the primary sources. He will always be open to attack by the specialist who can find inaccuracies of detail in his own narrow field. But such a pedantic critic simply condemns himself and his kind for failing to make their conclusions significant and accessible to an intelligent compiler. In criticizing the latest effort at synthesis, that of Dr Hutton Webster of Stanford, I shall diligently avoid all points of detail.

Indeed let me say at the outset that, in the sections of which I am competent to form an opinion, the author has succeeded well in his modest aim and rendered a real service to history itself. He has maintained a remarkably high standard of factual accuracy. The authorities cited in the bibliography are reliable and so up to date as to include C. F. C. Hawkes' *Prehistoric Foundations of Europe* (1940). The author has made a heroic effort not to overweight the narrative with ephemeral political events, while doing justice to those of enduring import. He has swept into his net art and religion, philosophy and science. Above all he recognizes archaeology as something more than

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a humble auxiliary science, as the key indeed that has opened up to history whole millennia and vast territories. Finally I cannot help congratulating the author on the degree of objectivity reached in his account of the Soviet Union and—less fully—of the Third Reich. For, be it remembered, the book covers everything from the Ice Age to September 1939! If then in the succeeding paragraphs I adopt a critical attitude, I do not wish thereby to disparage the value of this stupendous undertaking.

Nevertheless I do feel that an individual synthesis ought to give a clear impression of what Breasted meant by 'the Conquest of Civilization'; of the cumulative achievement of the millennia of effort it seeks to survey. This 'History of Civilization' is frankly written from 'the point of view of an inheritor of Western or European Civilization' without trying 'to discern in the process a movement predetermined and inevitable'. Even so, it must aim at presenting this civilization as itself the heir of the traditions and achievements of the Mayas and Sumerians, the Egyptians and Chinese, and of the nameless pioneers who have left no written records. To do this it should make a fuller and more appreciative use of archaeological evidence, not only to replace literary sources where these fail, but also to correct the one-sidedness of the picture these too often give. While it is an admitted weakness in prehistory that it can never reach the individual, being bound to deal only with classes of objects, archaeology in general gives a fuller and deeper picture of the past than can be gleaned from literary sources alone. At least in the Ancient East, as in the European Middle Ages and in China, writing was the prerogative of a tiny minority of clerks in a world of illiterates, so that written documents are apt to emphasize unduly the culture of this class. Even in the democratic civilization, mirrored in Athenian literature, women and slaves, as Toynbee reminds us, had no part. Modern archaeology on the other hand is less restricted. Of course in certain phases of prehistory and history—in the Bronze Age of Wessex and in Old Kingdom Egypt for example—the monuments and relics reflect almost exclusively the life of a small upper class. But that is felt as a defect. Indeed, to the chagrin of the old fashioned collectors and connoisseurs, it is exceptional; for the richest tombs have so often been pillaged and the most costly objects melted down, that the great mass of our data are provided by vulgar cemeteries and everyday objects so common that they were lightly discarded. Thanks to recent excavations Celtic Britain is no longer represented solely by chariot burials and knightly ornaments,

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but also by villages like Glastonbury and farms like Woodbury. The Indus civilization is known exclusively from the ruins of bazaars, private houses and industrial tenements, supplemented by such public buildings as a bath-house and a granary. Minoan civilization does not mean just the palaces of Knossos, Mallia, Phaestos and Hagia Triada, but also towns and cemeteries like Gurnia, Mochlos and Pseira. Even classical Greek art is not represented by the masterpieces of a Phidias so much as by tomb-stones and pottery-vases. The latter were of course cheap factory products, and some of the 'masters' who painted them, judging by their names, were freedmen or slaves.

I suspect too that archaeological periods would give a better framework for exhibiting the interrelations between the episodes in the grand drama than the conventional political scheme here adopted. Webster has in fact merely prefixed to the traditional sequence of Classical Antiquity—Middle Ages—Modern Times a prelude in Prehistory, America, China and the Ancient East. He begins with an anthropological chapter on Culture, followed by three chapters on Prehistory, from the racial and linguistic, archaeological and sociological standpoints respectively. After the 21 pages of chapter III covering everything from the Old Stone Age to the first Iron Age, the illiterate barbarians of Europe as revealed by prehistoric archaeology simply disappear. A chapter each is devoted to Ancient America, China, India, Babylonia and Assyria, Egypt, and the rest of Western Asia—the latter including the Hittites, the Phoenicians, the Jews and the Persians. Then we proceed in the usual order to Greece, Rome and the Middle Ages of Christendom, with a single chapter devoted to Islam inserted after those that treat of the Germans and of the Northmen and the Normans.

This arrangement fosters the illusion entertained by Spengler and Toynbee of a multiplicity of 'civilizations', any of which can be isolated from forerunners and contemporaries and still continue to behave as a living organism. It is not dispelled effectively by appending to the relevant chapters, as Webster does, a paragraph headed 'The Legacy of Egypt', 'Influence of Islamic Culture', and so on.

The illusion would disappear of itself without such external comments were science as adequately treated in earlier as in the modern periods. For, as Sarton¹ points out, 'the acquisition and systematization of positive knowledge is the only human activity that is

¹ *Introduction to the History of Science* (Carnegie Institution Publications, 376, 1927), I, 4.

pre-eminently and conspicuously cumulative'. But such treatment would have required an excursion beyond the pages of text-book histories—and perhaps beyond literary sources altogether—that our author has not risked. Mathematical and medical texts survive from about 2000 B.C. onwards, but their contents seem so childish as hardly to deserve the name of Science, until we remember that the first steps are always the hardest. But just for this reason they can be used in a popular history to illustrate our debt to the Babylonians and Egyptians. We have forgotten our own difficulties at school in mastering division and fractions when we first struggled to deal with quantities that cannot be conveniently represented by beads or counters. The Babylonian tablets and Egyptian papyri show mankind's first efforts to deal with this very problem. Unfortunately these texts have received little attention from Orientalists, who were by training inclined to prefer historical and mythological literature, and were in any case hardly competent to appreciate the true inwardness of the problems the ancient scribes were trying to overcome. It was not till a professional mathematician, Otto Neugebauer,² took the trouble to learn cuneiform and hieroglyphics, that a true appreciation of the mathematical achievements of the Ancient East was reached, though his results were subsequently extended and corrected by the veteran Assyriologist, Thureau-Dangin.³ Dr Webster gives the reader no help to reach this appreciation, and so misses the chance of explaining its bearings on Greek mathematics, which in fact receive only the perfunctory notice that would be expected from a victim of ordinary 'classical education'. So he fails to show how it was the Babylonians' achievement that rescued us from our schooldays dilemma, a point worth illustrating at the cost of a digression.

One of the greatest Oriental contributions to modern science was to discover a satisfactory method of dealing with fractions. The Babylonians hit upon the device of 'sexagesimals'—fractions expressed precisely as our 'decimals' save that the base was 60 instead of 10—i.e. for $\frac{1}{8}$ instead of .05 they wrote .3,20 ($\frac{3}{60} + \frac{2}{60^2}$) and for $\frac{3}{4}$, .45 ($\frac{45}{60}$). Thereby their mastery of number was extended to the whole domain of the rational. It might have been expected that this system would have disappeared in the first century B.C. with cuneiform literature, to be reinvented *de novo* when Stevinus published his 'Disime' in 1585. Nothing of the sort. Sexagesimal fractions were taken over by

² *Vorgriechische Mathematik*. Berlin, 1934. Reviewed ANTIQUITY, IX, 190-4.

³ *Textes mathématiques babyloniens*. Leyden, 1938.

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the Alexandrians⁴ together with astronomical data from the Babylonians, whose observatories were still functioning as late as 20 B.C. Ptolemy, for instance, uses sexagesimal fractions in his 'Almagest' and that not only for astronomical data but to express approximations to π and to square roots. In his commentary Theon works out the division of 1515.20,15 by 25.12,10 (getting 60.7,33) and extracts the square root of 4500 as 67.4,55. With the 'Almagest' they were adopted by the Arabs and came back to Europe when that work was translated from the Arabic into Latin in the 12th century. By the 14th century the idea was already being applied to the decimal notation by Bonfils of Tarascon⁵ now using the 'Arabic' numerals.

But it is not often that continuity of scientific tradition over three thousand years can thus be demonstrated from written documents. Archaeology offers other data on ancient science. Modern science owes quite as much to the craft-lore handed on by hunters, farmers, potters, smiths, glass-makers and other working artisans as to the written tradition of astrologers, alchemists and medicine-men. Craft-lore found literary expression only late and at first sparsely. Before the invention of an alphabetic script artisans were almost inevitably illiterate, and even the Greek literati tended to look down upon *technai* as 'banausic'. But it found concrete expression in permanent products. Studied in conjunction with technical experts as in Lucas's *Ancient Egyptian Materials*, relics give the archaeologist as good a clue to the chemistry and geology of antiquity as alchemical tablets or papyri, for the relics disclose what substances and processes were known and used at any period, while the interpretation of literary terms is often doubtful, especially as many relevant texts are deliberately cryptogrammic. Similarly our appreciation of the Romans' engineering is enhanced by a study of their roads, aqueducts and buildings more than by reading Vitruvius.

By admitting such archaeological evidence we are really studying scientific tradition. And in the monuments and relics resulting from its applications, we can trace that tradition across Dark Ages where written sources fail and into periods before writing began, back to man's first great physico-chemical discovery—the production of fire itself.

So too archaeology provides the most reliable gauge of the extent

⁴ Examples can conveniently be found in the Loeb volume *Greek Mathematical Works*, edited by Ivor Thomas, pp. 45 ff., and in Heath, *A History of Greek Mathematics*, 233.

⁵ cf. *Isis*, xxv, 16-45

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and intensity of intercourse between the several parts of the inhabited world which made possible the pooling of human experience—and it is the pooled experience of mankind that we inherit. Geographical knowledge in this sense cannot be measured by the writings of cloistered schoolmen or temple clerks. The Neo-Babylonian copy of a map of the world in the British Museum⁶ is just as much a travesty of the 'geographical knowledge' of the 6th century B.C. as is Ibn Hauqal's map⁷ of that of the 10th century A.D. Nor can one afford to rely exclusively on travellers who wrote memoirs or voyages historians happened to believe in.⁸ Like most literary historians Webster places pathetic faith in such reports. He even solemnly assures us that Pian de Carpini and William de Rubruquis were 'the first Europeans to cross in the Middle Ages the deserts and mountains of Central Asia'! William, as it happens, himself reports how he found at Qaraqorum a woman of Metz who had married a Russian carpenter, a goldsmith from Paris named William Buchier and Basil, the son of an Englishman! A comparison between the jewellery from Troy, Byblos, Kish and Mohenjo-daro encourages the belief that the Parisian's fellow-craftsmen had been making equally arduous, if rather shorter, journeys three thousand years earlier. So too the rectangular seals dug up in the ruins of Sumerian cities on the Euphrates, but manufactured in the Indus valley, foreshadow the merchandize transported over greater distances by the Venetians in the 13th century. By reinstating the archaeological evidence the continuum of the oikumene, made explicit in the medieval travellers' narratives, could be displayed as an enlargement of one already implied in the Bronze Age by the 24th century B.C.

Moreover, by recasting the exposition in the framework of archaeological periods to replace the current politico-geographical basis, the progressive enlargement of that continuum could be graphically traced. No doubt at the beginning of history, in the Early Bronze Age of the Orient, the three oldest civilizations—the Egyptian, the Sumerian and the Indus—would appear so completely unrelated as to justify the purely separate treatment accorded to them throughout by Webster. For they do occupy geographically isolated areas, and each exhibits to the

⁶ Republished in ANTIQUITY, IX, 312.

⁷ Figured in Arnold and Guillaume, *The Legacy of Islam*.

⁸ The reports of Necho's Phoenicians who, sailing westward round South Africa, noticed the sun on their right, and of Pytheas on his Atlantic voyage, were rejected as incredible.

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archaeologist, as much as to the literary historian, a highly individualized physiognomy in religion, art, technology, social and economic organization. The contrast indeed can be seen in the forms of even the simplest metal tools like adzes, axes, chisels and saws.

Yet the isolation of these foci may be more apparent than real. Egypt and Sumer at least lie at the horns of Breasted's Fertile Crescent. Between them recent excavations have been revealing in prehistoric times a continuum of barbaric cultures, the interrelations of which are only gradually emerging; the excavations at Tepe Gawra and Arpachiya⁹ in Assyria, at Tell Halaf and Chagar Bazar on the Khabur,¹⁰ at Carchemish on the Upper Euphrates,¹¹ at Judeideh on the Orontes¹² and at Ras Shamra on the Syrian coast,¹³ have already disclosed remarkable continuity from the Tigris to the Mediterranean—if its extension to the Nile be still obscure. Moreover the indications of contact between Egypt and Mesopotamia, enumerated by Frankfort¹⁴ in 1925, have been substantially increased during the last ten years. A basalt stele discovered in the Jemdet Nasr layers at Erech (Warka)¹⁵ is carved with figures agreeing strikingly in physiognomy, costume and armament with those depicted on the famous knife-handle from Gebel el-Arak in Upper Egypt, in which some sort of Mesopotamian inspiration has always been suspected. The sign for boat¹⁶ on the pictographic tablets from the same Sumerian site, is again the 'foreign' boat which appears in Egypt first on the knife-handle and contemporary documents. Pictures of the same 'foreign' boat have now been found by Winkler¹⁷ on the rocks of the wadis between the Nile and the Red Sea. Between the Indus and the Tigris the varieties of painted pottery collected by Sir Aurel Stein¹⁸ from the oases and valleys of Iran, Seistan, and Baluchistan, though still only datable to a vague 'chalcolithic' period, may well prove to be evidence of a truly prehistoric

⁹ *Asia*, 1938, xxxviii, 536 ff.; *Iraq*, 1935, II, I ff.

¹⁰ *Iraq*, 1936, III, I ff.

¹¹ *Iraq*, I, 146 ff.; cf. LAAA, XXIV, 130 ff. (Sakje Gözü).

¹² *AJA*, 1937, xli, 10.

¹³ Schaeffer, *Ugaritica*, I.

¹⁴ *Studies in the Ancient Pottery of the Near East*, I, 118-135.

¹⁵ *Abhandl. preuss. Akad. d. Wissen., phil.-hist. Kl.*, 1933, 6; cf. Contenau in *Syria*, xvi, 532 and Scharff in *ZfA.*, 1935, Lxxi, 90 ff.

¹⁶ Nos. 216-7 in Falkenstein's *Archaische Texte aus Uruk*; it is depicted also on contemporary seals, cf. Scharff, loc. cit.

¹⁷ H. Winkler, *Rock Drawings of southern Upper Egypt* (Egypt Explor. Soc., *Arch. Survey of Egypt*, 26), 1936.

¹⁸ *Iraq*, III, p. 111 ff.; Stein, *Archaeological Reconnaissances in the Punjab and South-eastern Iran*, 1937.

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continuum of cultures such as is already established in the Fertile Crescent. Some connexion before the final crystallization of the Sumerian and Harappa civilizations seems a necessary inference from the identity of several technical processes, particularly ceramic. Intercourse during historical Sumerian times is of course fully attested by the actual Indus manufactures, notably seals, found in Mesopotamia.

In the later Bronze Age of Western Asia¹⁹ these interrelations become fully explicit in the literary record too; here the history of the second millennium must be largely that of the interaction between the several civilized States. The Egyptian Foreign Office archives from Tel el-Amarna, and the Hittite archives from Boghaz Keui disclose a veritable society of States for all the world like the constituents of modern 'Christendom'. For all their professed exclusiveness Egypt, Hatti, Mitanni, Assur and Babylon all use, as a common diplomatic language, Babylonian written in the cuneiform script, and are related not only by commerce, but by an interchange of ambassadors, soothsayers, wives and gods. No ideological differences separated them more or even as much as sundered Protestant and Catholic States in the seventeenth and eighteenth centuries. Archaeological evidence fully justifies the inclusion in this oikumene of Crete and, later, of the rest of Greece. And the celebrated beads of East Mediterranean faience from Hungary and Wessex show how its civilization was already irradiating the barbarian fringe north of the Alps.

Then in the Iron Age we should see the enlargement of this Bronze Age circle to include the whole zone from the Straits of Gibraltar to the Oxus and the Ganges. Archaeological data can measure not only the spatial extension, but also the intensification, of intercourse in the Iron Age; the distribution of Corinthian and Attic pottery is an index of a new sort of commerce in cheap goods produced in mass for popular consumption as compared with Bronze Age trade in which, apart from metals, luxuries for 'conspicuous consumption' by courts and nobility predominated.²⁰

For the prehistorian the colonization of the Mediterranean basin

¹⁹ Despite the invocation by the King of Mitanni in his treaty with the Hittites in 1360, of Indra, Mitra, Varuna and the Nasastyâ—gods familiar from the Rig-Veda, the oldest hymns of the Aryans of India—intercourse between that sub-continent and the west cannot yet be demonstrated archaeologically in this period. And China, where the historical record now begins, can be linked with the Near East only by the general considerations discussed by Carl Whiting Bishop in *ANTIQUITY*, 1940, xiv, 301 ff.

²⁰ Heichelheim, *Wirtschaftsgeschichte des Altertums*, 244 ff.

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by the Phoenicians and the Greeks is but the continuation of the Minoans' pioneering efforts. To the historian the empires of Assyria, Babylon, Persia and Macedon must appear more patently fulfilments of the ambitions of Sargon of Agade, Ur-Nammu and Hammurabi, but cannot be thus described when they are treated in three separate geographical chapters. Webster does indeed rightly point out how 'Alexander the Great took over both the substance and the trappings of absolute monarchy from the last Persian king; from Alexander absolutism descended to the Graeco-Macedonian kings who reigned after him; and from them it passed on to the later Roman emperors and to the rulers of medieval and modern Europe'. To bring out the continuity of civilization it would be better and more accurate to elaborate the point when dealing with Hellenism. The Ptolemies' realm not only coincides geographically with Ancient Egypt, it preserves the Egyptian language, script, arithmetic, economic centralization, and bureaucracy in unbroken descent from the Memphite monarchy of the third millennium, and just for this reason the Ptolemies are invested with the divinity that belonged to Pharaoh from the days of Menes. The Seleucid Empire is an enlarged descendant of that of Sargon of Agade. Throughout the period of Greek domination the Babylonian temples continued to function as universities, and the priestly astronomers continued to develop their science on traditional lines. And in cult an Antiochus steps into the place in the pantheon left by Naram-Sin, Shulgi and Hammurabi.²¹ Indeed in his titles—Sōtēr, Epiphanēs, Euergetēs—a Hellenistic monarch claims the sociological role and ideological position of his forerunner who had been appointed by Enlil 'to make justice manifest in the land, to destroy the wicked and evil-doer and to prevent the strong oppressing the weak'. This place too the Caesars inherited with their kingdoms from Antiochus and Ptolemy.

At the same time the contrast between the Iron Age and the Bronze Age need not be ignored. One tremendous innovation, best illustrated from literary sources, is the emergence of philosophers and religious reformers in China, India, Iran, Palestine and Greece. Individuals who did not belong to the established priesthoods ventured to receive and publish to the people personal revelations, or even to appeal to facts of normal experience that anyone might verify and to the reason that is common to all men. They invoked one god, lord of all, instead

²¹ McEwan, *The Oriental Origin of Hellenistic Kingship*. Chicago, 1934. (O. I. Studies, 13).

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of the multifarious tribal deities of the State religions. They promised salvation not in return for magic ceremonies and the performance of rituals, but for just behaviour in a society that comprised all the faithful, if not all men, not merely fellow tribesmen and the subjects of the same State. A history of civilization is not indeed bound to explain why Confucianism, Buddhism, Zoroastrianism, the Prophetic Movement and Ionian philosophy start so nearly at the same time²²—in archaeological chronology at least. By scattering the prophets and philosophers over four chapters the 'History' before us does not let the reader see that there is a problem. By introducing them in the Iron Age they would appear in a significant context.

For the Iron Age is distinguished from the Bronze Age by a new economy too, which archaeology and literary history can alike help us to grasp. In a general way bronze equipment was the prerogative of a relatively small ruling class and its dependants. In barbarian Europe that is clear enough from the Bronze Age graves of Wessex and Denmark, as Brøndsted and Piggott have recently emphasized. In Greece it is equally clear that the long rapiers of Mallia, Mycenae, Dendra and Zafer Papoura are aristocratic weapons. But here the epics confirm the deductions of archaeology. Homeric warfare resolves itself into a series of single combats between champions, the ill-armed masses remaining passive spectators. And of course their political influence was proportionate to their military value. In the Oriental Bronze Age the use of metal was doubtless much more widespread. Still in Egypt mining was always a State monopoly; at least under the Old Kingdom only the royal army and craftsmen working for the court and the feudal nobles enjoyed a full metal equipment from its produce. Even in Mesopotamia where trade was very effectively organized—not without frequent support from the State²³—metal was very costly. In the time of Hammurabi a shekel of silver would purchase²⁴ only 120 to 150 shekels of copper, while for the same sum you could only get perhaps 14½ shekels of tin. Under the Neo-Babylonian Empire iron cost only about half as much (225 shekels for one shekel of silver) and the

²² How nearly we cannot say while the date of Zoroaster for instance can be put anywhere between 1000 and 600 (Webster) or even later.

²³ Heichelheim, *op. cit.*, 175-205 etc., maintains that throughout the Ancient East the despotic monarchs controlled foreign trade as completely as Totalitarian States do today; Speiser, on the contrary, contrasts the totalitarian regime of Egypt with 'a social order founded on the recognition of personal rights' in Mesopotamia, *Nature*, 1940, CLXVI, 707.

²⁴ Meissner in *Abhandl. preuss. Akad., phil.-hist. Kl.*, 1936, 1.

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price of copper fell substantially in sympathy. It was not only in barbarian Europe that the new metal for the first time 'put into the hands of every farmer cheap and durable tools for tree-felling and cheap but efficient weapons for warfare'. The new equipment put an end to the unchallenged supremacy of the hero with his bronze rapiers and the royal army equipped by State arsenals.

But if the suggested rearrangement would help to disclose continuity, it would also compel the historian to face the fact of Dark Ages. Not in single States alone, but over large areas of the oikumene, history seems to be interrupted. Not only do the literary sources dry up; irruptions of barbarians from without combine with internal decay to disrupt the whole economic system, destroy accumulated capital, and consign to death by famine or massacre no insignificant fraction of the civilized population. In a chaos of violence the tradition of culture itself seems threatened with extinction. During the Oriental Bronze Age such symptoms can be detected in Egypt in the First Intermediate Period (ending about 2000 B.C.) and again with the Hyksos invasion and in Mesopotamia after the collapse of the Dynasties of Agade and Babylon I. Yet it is doubtful whether these disturbances and dislocations were contemporary in the two provinces²⁵ or sufficiently general to deserve the name of Dark Ages; in neither area was the literary, scientific or economic tradition completely interrupted so that there was no relapse into barbarism and illiteracy, but after each interruption cultural development started again where it had left off. In India on the contrary the Harappa culture seems to have been so nearly extinguished in a still unexplained catastrophe that we can prove the local survival of some of its technological traditions only by ethnographic fossils.

In any case the Bronze Age ended in the Near East in a real Dark Age beginning with the 'Dorian Invasion' of Greece and the Land and Sea Raids on Egypt and Hither Asia. Barbarians wiped out the Minoan civilization of Crete and the Mycenaean culture in mainland Greece. The Hittite Empire in Anatolia disappears. In Babylonia the Kassite Dynasty ends as barbarian Aramaeans filter in, and the

²⁵ Till documents recently discovered at Mari imposed a drastic reduction on current dates for the First Dynasty of Babylon and all the earlier chronology of Mesopotamia, an approximate synchronism between the Hyksos invasion of Egypt and the Kassite infiltration into Babylonia seemed plausible. But on Sidney Smith's (*Alalakh and Chronology*, London, 1940), latest interpretation the First Dynasty came to an end only fifteen years before the Hyksos were expelled.

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land becomes for a time subject to Assyrian overlordship. Merneptah and Rameses indeed repel the invaders from the Nile valley, but Egypt is so exhausted that barbarian mercenaries soon come to occupy the throne of Pharaoh itself.

In Aegean archaeology the next four and a half centuries seem indeed a Dark Age, not only by contrast to the lustre of the Mycenaean period but also by reason of the interruptions of foreign trade. Down to 1200 B.C. intercourse between 'prehistoric' Greece and the literate lands of North Syria and Egypt had been so regular that archaeological periods can be dated almost to half-centuries from the historical records. Thereafter there is such a complete lack of synchronisms that Aegean chronology is really guess work till the eighth century B.C. We simply do not know where to put the poor remains nor what should fill the dark centuries.²⁶ But it is really the preoccupation of Western scholars with this devastated province—which was apart from China the latest area to emerge from barbarism to a brilliant, if short-lived and shallow, civilization—that makes the whole period seem so extremely dark.

In reality the lacuna is far from universal. The Assyrian State and its component cities were flourishing, and the Assyrians had already appropriated the technical achievements, the scientific and business traditions of their southern neighbours as well as the latter's religion and cult. Sumerian and Akkadian texts were collected for the royal libraries, astronomical studies pursued in the temple observatories, particularly at Kalah. Even in Babylonia, as in previous dark ages, economic and scientific life, like cult, continued in the cities and temples albeit impaired by foreign domination and impoverishment. Neither the craft-lore of artisans nor the mercantile acumen of merchants, nor yet the traditional learning of the temple clerks, was dissipated when their cities changed masters. The same is true of Egypt; the jewellery of the 22nd Dynasty pharaohs, and the carvings of sarcophagi, show that the craftsmen had not lost their skill if their patrons had lost their taste. Finally Phoenician city-states weathered the storm physically, preserving at least the standard of civilization they had reached in the Amarna age. They could exploit and develop such Minoan-Mycenaean traditions, techniques and geographical knowledge as must have been brought by the Aegean colonists, whose importance has been so strikingly demonstrated by Schaeffer's excavations at Ras Shamra-Ugarit.

In European Greece itself more came through than could be inferred

²⁶ The controversy in *AJA*, XXXVII, XXXVIII and XLIII as to when the alphabet was introduced—1000 or 700 B.C.—is revealing.

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from the Dark Age relics alone. No doubt the Minoan priest-kings and the Mycenaean feudal chivalry were alike wiped out. Such clerks as had been employed in the administration of the wealth concentrated by princes and heroes—and the archives discovered by Blegen at 'Nestor's Pylos' in 1939 prove that such had existed—naturally lost their employment. The luxury industries of the feudal courts became obsolete, and the trade that had supported them withered away. Cheap iron swords replaced costly bronze rapiers. The urban centres of manufacture and commerce thus tended to relapse into more or less self-sufficing villages. Even rural economy may have been altered by the invaders.²⁷ But Greece did not revert to neolithic barbarism nor even to the stage represented by the Middle Helladic townships before 1600.

The standardized techniques of viticulture and olive-growing described in Hesiod cannot be fresh discoveries by new-come barbarians, but must be a legacy from the Helladic pioneers of Greek farming. The same author's rustic calendar embodies the astronomical observations and botanical-zoological lore accumulated by an essentially Aegean peasantry. Craft traditions survived too. Throughout the Dark Age Geometric pottery is wheel-made and the technique of its slip and glaze paint is Mycenaean; only the forms and designs are strange. So Mycenaean potters had escaped destruction and taught their craft to their children and apprentices, handing on to Classical Greece the appropriate 'pre-Hellenic' names for their products. But they had to change the style of their manufactures to meet the demands of new consumers. The same must be true of other crafts. Certainly 'Crete had preserved the secret of the purple and had not forgotten metal-working'. A renowned craftsman, like Tychion, who came from Boeotia to make the shield of Ajax, might have shared his patron's fate. Humbler smiths were indispensable. And so some sort of trade must have persisted too; even the new blacksmith would have to import his iron in most parts of Greece.

Iron may perhaps at first have been carried mainly in foreign bottoms. The story of the Taphian Mentès and his cargo of iron in the *Odyssey*, and Herodotus' rationalized version of the Io myth both seem to reflect the conditions of the Dark Age. In Greece itself some diminution of geographical knowledge since Mycenaean times has been deduced²⁸ from a comparison between Hesiod's geography

²⁷ Heichelheim, *op. cit.*, p. 271, suggests that the northern invaders introduced a two-field system.

²⁸ Burn, *The World of Hesiod*, but cf. p. 11 above.

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and Homer's. That does not mean that Minoan maritime and commercial experience had been lost. At worst it had been transferred to the Levant, whence it was brought back by the Phoenicians presumably together with the alphabet between 1000 and 700 B.C. Perhaps, however, the success of the Pythia in guiding overseas colonization, if any reliance be placed in Delphic claims, was due to the conservation by Apollo's priesthood of information gathered by Minoan merchant captains and Mycenaean pirate chiefs. And the Dipylon ships seem to be Late Helladic craft with a ram added.²⁹

Finally, that sparks of Minoan art gleamed through the Dark Age is evident from the Homeric poems themselves. So the Hellenes did not have to create miraculously out of sheer barbarism the foundations for classical technique, science, economy and art. The intruders had not succeeded in demolishing entirely the Minoan-Mycenaean fabric; they had lopped off excrescences that were not firmly established on a wide popular basis.

This problem of discontinuity can hardly be adequately presented, still less solved in a 'History' which has already carried the story of the Ancient East down to the fourth century and wound it up before the Aegean is reached, which moreover allows only two pages to the Minoan and Mycenaean civilizations. Nor is this deficiency entirely made up when the problem recurs in the Dark Age of Western Europe, after the break-up of the Roman Empire. The role of Byzantium and of the Arabs in the transmission of the Classical tradition is indeed duly stressed. But the reader might think that Western Europe, apart from the Church, relapsed completely into a Hallstattian barbarism. Of course that is an exaggeration. For instance some of the technical traditions established under the Empire survived; the glass-houses in Gaul and Germany did not go out of business altogether. The medieval artist inherited so much of the Greeks' innovations in representing the human form as had been assimilated by Provincial potters and Legionary masons; he did not therefore go back to the style of the Warrior Vase or the Shaft Grave stele! But Dr Webster may perfectly well retort that he had no space for all this. And in any case I am supposed to be writing a review and not a History.

²⁹ Cohen, *AJA*, XLII, p. 194.

More about Querns

by E. CECIL CURWEN

A TENTATIVE account of the typology and development of British querns, or hand-mills, was attempted in a former article in *ANTIQUITY*,¹ since which a few fresh points of interest have arisen. So far as the writer is aware, nothing said in that paper needs serious modification, and the views expressed seem to have met with general approval, with one possible exception.

THE ORIGIN OF THE ROTARY QUERN

The suggestion put forward that the rotary quern may have been developed from the donkey-mill, rather than the reverse, did not appeal to one reviewer, though he gave no reasons for his difficulty in accepting it. Since a principle of economic development may be involved, it may be worth while to consider the probabilities again—for, indeed, there is little in the way of actual evidence to go on. Donkey-mills were large revolving mills that were turned by harnessing donkeys to radially-projecting levers. They were a product of urban civilization, in which they stood for food-production on a commercial or industrial scale. A quern, whether of the saddle or rotary variety, was an instrument of peasant-culture, that is, of individual food-production. The first application of the rotary principle to corn-grinding was such a profound departure from existing practice that it cannot well be regarded as a normal development from the immemorial saddle-quern, the movement of which was oscillatory. It is clearly not the product of a peasant's mind, but of an inventive genius such as Greek civilization later produced in the person of Archimedes; moreover the only comparable piece of mechanism that already existed was the potter's wheel, which is acknowledged as having been a product of urban civilization as opposed to peasant culture. In an urban culture, one may therefore ask, which stimulus is more likely to induce an educated man to invent a piece of machinery—the well-being of poor country peasants whom he seldom sees, or the prospect of gain derived from the

¹ *ANTIQUITY*, 1937, XI, 133-51.

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wholesale milling of corn on a commercial scale? If the brilliance of his invention expended itself on a mill no larger than a hand-mill, he would be little better off than if he continued to employ large numbers of saddle-querns. Surely it is only to be expected that the first product of the application of the new principle on a commercial scale should be a large mill, specially suited to the purpose for which it was invented. When the donkey-mill had become well-established, it would be natural for village craftsmen to copy the principle on a smaller scale, and so to turn out rotary hand-mills for the peasants.

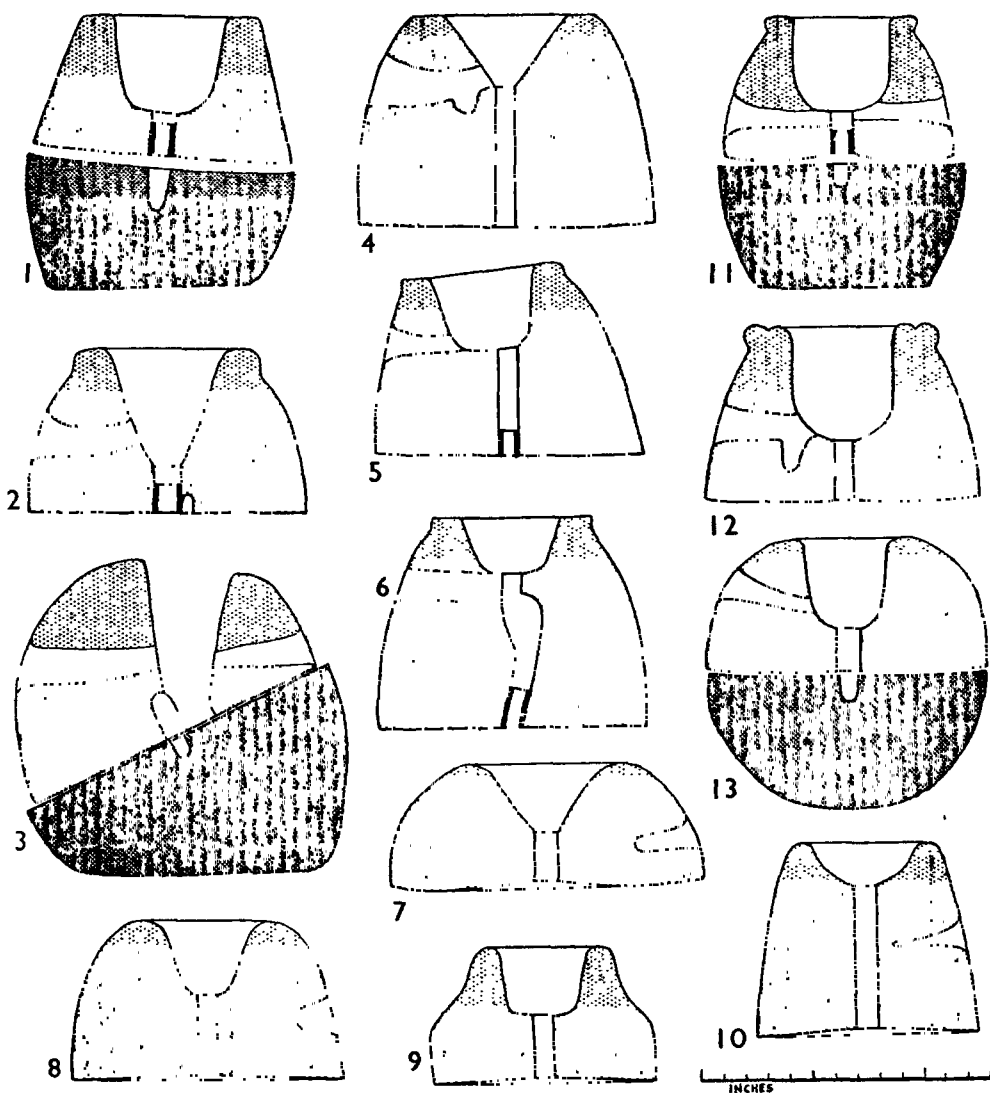
Literary evidence favours this view, so far as it goes, for Greek donkey-mills are referred to as early as 400 B.C., while rotary querns appear first in Virgil in the first century B.C.; negative evidence here, however, might be regarded as of even less value than usual, did we not know from literary sources that the Romans used mortars for grinding corn at least as late as the first century A.D. Finally, rotary querns of a form that suggests derivation from the tall and narrow donkey-mills, were brought to Britain by Iron Age B folk, whose La Tène culture owed much to Greek sources; and so far as archaeological evidence is available this quern was not introduced by the earliest waves of La Tène invaders (third century B.C.), but during a later phase of their influence upon southern Britain, perhaps about 100 B.C. If, therefore, it had been available in Greek Massilia at an earlier date, presumably it might have reached Britain with the first La Tène immigrants. In Denmark, which received neither La Tène nor Roman invaders, the rotary quern did not appear till the third century A.D.²

In the writer's opinion all lines of inference, including consideration of economic probabilities, point to the rotary quern having been derived from the donkey-mill, and not *vice versa*; moreover they suggest that the rotary principle in milling may have been one of the contributions of Greek culture to modern civilization.

THE HUNSBURY TYPE (FIGS. 1-13)

The general principles suggested in my former article as governing the typology and development of British querns still seem to hold good, in spite of the fact that during the Roman period a considerable variety of types make their appearance. On the whole, however,

² ANTIQUITY, 1938, XII, 151. According to Prof. R. A. S. Macalister saddle-querns had not yet been superseded by rotary querns in Palestine in the time of Christ (*A Century of Excavation in Palestine* (1925), 233), and yet the donkey-mill was already known, for it is referred to in Matthew, xviii, 6 (μύλος ὀνικός).



FIGS. 1-13. QUERNS OF HUNSBURY TYPE

- 1-6 Hunsbury (Iron Age AB). (Northampton Museum).
- 7 Shrewsbury Museum (local).
- 8 Buxton (late first century A.D.) (Buxton Museum).
- 9, 10 Melandra Castle (A.D. 80-400). (Buxton Museum).
- 11 Thurmaston, near Leicester (Leicester Museum).
- 12 Leicester Museum ; no history.
- 13 Leicester Museum : upper stone, no history ; lower stone from Holwell (Leics.) ; association probable, but uncertain.
- 1, 2, 5, 6, 11 Iron sleeves *in situ*.

Lower stones, darker stippling.

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these variations introduce unimportant features which do not prevent the specimens in question from being assigned to their probable position in the developmental series, under the guidance of the principles already suggested.

One important type of pre-Roman quern—the Hunsbury type—was alluded to, but not illustrated, as the writer had not at that time had an opportunity of examining the fine series that is preserved in the Northampton Museum. That lack has now been remedied.

The querns found in the Iron Age AB hill-fort of Hunsbury, near Northampton, include at least sixteen complete upper stones as well as a few lower stones. They form a remarkably homogeneous series, all the specimens except one, which is of normal Wessex type, presenting the same general features. The upper stones are high and narrow, about a foot in diameter at the base, from 6 to 10 inches high, and tapering to a width of 7 or 8 inches at the summit. The latter is usually flat, and surrounds a basin-like cavity (or hopper), 4 or 5 inches in diameter and 3 or 4 inches deep. Less frequently this cavity is funnel-shaped. From the bottom of the hopper a straight cylindrical boring, or feed-pipe, about one inch in diameter, extends to the base of the stone and opens in the centre of the grinding-surface. In nine instances the lower end of this boring is furnished with an iron sleeve, which was intended to ride round the spindle which projected from the centre of the lower stone (FIGS. 1, 2, 5, 6, 11). In one case a piece of an iron spindle remains jammed in the boring of an upper stone, and in another the base of an iron spindle remains bedded in its socket in a lower stone. The handle-socket is cut in the side of the upper stone, runs in horizontally, and opens into the lower part of the hopper, or less frequently into the upper part of the feed-pipe.

In every case the grinding surface is as nearly as possible quite flat, and not concave as in the contemporary southern English querns of Wessex and Sussex. In two cases there is gross asymmetry in the boring of the hopper or of the feed-pipe (FIGS. 5, 6),³ and in two more a separate socket has been provided for the spindle (FIGS. 2, 3).

The lower stones have spindle-sockets in the centre of the grinding surface, and are never completely perforated. They are 5 to 6 inches thick, and the grinding surfaces are flat. One stone is so asymmetrical that if it lies on its base the grinding surface is tilted at an angle of 25 degrees from the horizontal (FIG. 3).

³ It is difficult to see how a quern with an obliquely set spindle-socket like that of Fig. 6 could have revolved at all. The whole thing looks amateurish.

MORE ABOUT QUERNS

The Hunsbury type of quern thus differs in two important respects from its contemporaries in Wessex and Sussex: (1) the grinding surfaces are flat, instead of being convex in the lower stone and concave in the upper; and (2) the method of mounting the upper stone on the lower follows a different principle.

In the normal method, which will be described more fully below, the weight of the upper stone is transmitted to the spindle by way of a bridge, or *rynd*, of wood or iron which is fixed across the perforation of the upper stone and rests on the point of the spindle. In the Hunsbury querns there is no *rynd* at all, nor was there room for one in the excessively narrow feed-pipe. Instead, the weight of the upper stone rested directly on the grinding surface of the lower stone, and the function of the spindle was merely to keep the upper stone centred. One can only think that this principle of working must have been employed experimentally, and that owing to its defects it did not long survive. The obvious defect is, of course, the difficulty of feeding the grain past the iron sleeve and spindle which almost completely blocked the outlet of the feed-pipe. The separate spindle-sockets in FIGS. 2 and 3 may have been added to obviate this trouble, but with a wider aperture and a properly adjusted *rynd* no difficulty of this kind occurs. One might also anticipate that, with the upper stone resting directly on the lower, there is no very obvious inducement for the grain to insinuate itself between them. Perhaps it may have been for this reason that one performer hopefully tilted the whole machine over at an angle of 25 degrees, as already described. We say 'hopefully', but FIG. 3 looks more like a counsel of despair.⁴ With the upper stone properly suspended and adjusted this difficulty does not arise.

Querns of Hunsbury type are fairly common in Leicestershire. Of specimens in the Leicester City Museum one is a complete quern consisting of upper and lower stones, with iron sleeve and two handle-sockets, from near Thurmaston (Leicester), but without dating associations (FIG. 11). There is also an upper stone from a late pre-Roman Iron Age pit at Harston in northeast Leicestershire; and a lower stone from Holwell which looks as if it may fit another local upper stone with no history preserved (FIG. 13). Yet another local upper stone, without history, has a moulded summit (FIG. 12).

Four specimens that appear to belong to this type (FIGS. 9, 10),

⁴ Lower stones that are tilted at an angle to the horizontal are not infrequent; a possible explanation is that they may have been the result of an attempt to encourage the meal to emerge on one side of the quern, instead of all round it.

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come from Melandra Castle, Derbyshire (Buxton Museum), which was occupied from about A.D. 80-400. No closer dating seems to be available, but the type may be presumed to be early. Another, from Buxton, dated about A.D. 90, differs only in having a short, non-perforating handle-socket (FIG. 8). Finally, one from Bourton on the Water (Glos.) is in the Cheltenham Museum. Many others no doubt exist, and a distribution-map will be an advantage if it can be compiled.

THE PUDDINGSTONE TYPE (FIGS. 14-24)

There is a series of querns made of Hertfordshire puddingstone, or conglomerate, which look as if they may derive, at least in part, from the Hunsbury type.

The upper stones are bun-shaped, or conical with convex sides, and some show a rather characteristic carination an inch or more above the base (FIGS. 17, 20, 22). They lack the distinctive flat summit, and the hopper, which may be bag-shaped or funnel-shaped, tends to merge with the short and rather narrow feed-pipe, which is always circular and seldom more than one inch across. No iron sleeves have been noted so far. The diameter of the stones is from 10 to 12 inches, and the height from 3 to 5 inches. The grinding surface is nearly flat, being at most very slightly concave. Handle-sockets when present are horizontal, but in only one case does one perforate into the hopper.

The lower stones are also hemispherical (FIGS. 23, 24), so that one must assume that the round base⁵ was bedded in clay, perhaps up to the level of the grinding surface. In this way the collection of the meal after grinding might be facilitated. There is the usual central socket for the spindle.

I have notes of 16 specimens of this type of quern, 12 of which are upper stones, and 4 lower. Their distribution is as follows:—Richborough (1), Canterbury (1), Oldbury hill-fort (1), Maidstone Museum (4—provenance uncertain), Luton (4), St. Albans (1), Leicester (1), Thetford (1), Houghton, Hunts., (1), and Hardham, Sussex, (1).

The uniformity of material, and (within limits) of form, point to the type having been most probably the product of a single Hertfordshire firm. Where datable associations are available they are always Roman; the specimen from Hardham (Sussex)—the only one having a perforating handle-socket—can be dated between A.D. 50 and 150. Moreover the distribution suggests the use of Watling Street as a trade-route.

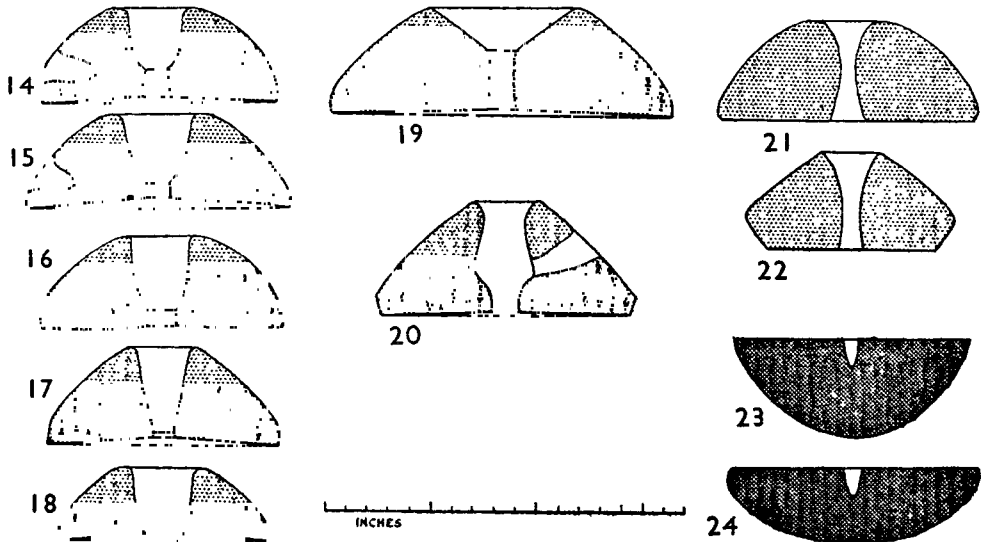
⁵ The Welsh have a special term, *breuan dinfoel*, for a round-bottomed quern.

MORE ABOUT QUERNS

The form of these querns lends little encouragement to the view that they were mounted with a rynd in the normal way. It seems, perhaps, more probable that they may have been mounted in the Hunsbury manner, but with wooden spindles and no sleeves. This might be expected to work more satisfactorily, and to offer less resistance to the entry of grain.

THE ORIGIN OF THE HUNSBURY TYPE

The Puddingstone type of quern appears to be later than the Hunsbury type, and to be a derivative from it. As was pointed out



FIGS. 14-24. PUDDINGSTONE QUERNS

- 14, 15, 18, 21 Luton (Luton Museum).
- 16 Thurmaston, near Leicester (Leicester Museum).
- 17 St. Albans (Luton Museum).
- 19 Richborough.
- 20 Hardham, Sussex (A.D. 50-150). (Lewes Museum).
- 22, 23 Maidstone Museum (local).
- 24 Thetford, Norfolk (Luton Museum).

Lower stones, darker stippling.

in my former article, some of the Roman and post-Roman querns of northern England, and especially of Scotland, appear also to have been derived from the Hunsbury type by a process of progressive widening and flattening. But whereas the flat grinding surfaces are a constant

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feature of these derivatives, it is quite uncertain how far the Hunsbury method of mounting was retained—either in iron or in wood. Ultimately there is likely to have been a reversion to what may be called the normal method, viz., the use of a rynd. In any case the modern Hebridean querns made use of the rynd.

With the exception of the Puddingstone type, tall querns with flat grinding surfaces are rare south of the Thames and Bristol Channel. A specimen from Ham Hill, Somerset (Taunton Castle Museum) might perhaps represent an early stage in the differentiation of the type. One of these (FIG. 24 of my former paper) has the external form of the pre-Roman Wessex querns, but the grinding surface is almost flat, and there is a narrow, cylindrical feed-pipe, but no hopper. As usual in Wessex, the handle-socket is lateral and does not perforate. Another quern from the same site, of cylindrical form, has a nearly flat grinding-surface, but the circular feed-pipe is wider, and expands towards the lower end. There is also a lower stone belonging to a similar quern. These three specimens are not much to found an argument upon, but they do hint at the possibility that the cardinal features of the Hunsbury type may have begun to take shape in western Wessex, and spread north with the expansion of the Iron Age B-culture. In support of this view is the apparent absence of any other type of pre-Roman rotary quern in the Midlands.

THE MOUNTING AND USE OF QUERNS (PLATES II, III, FIGS. 24a-27)

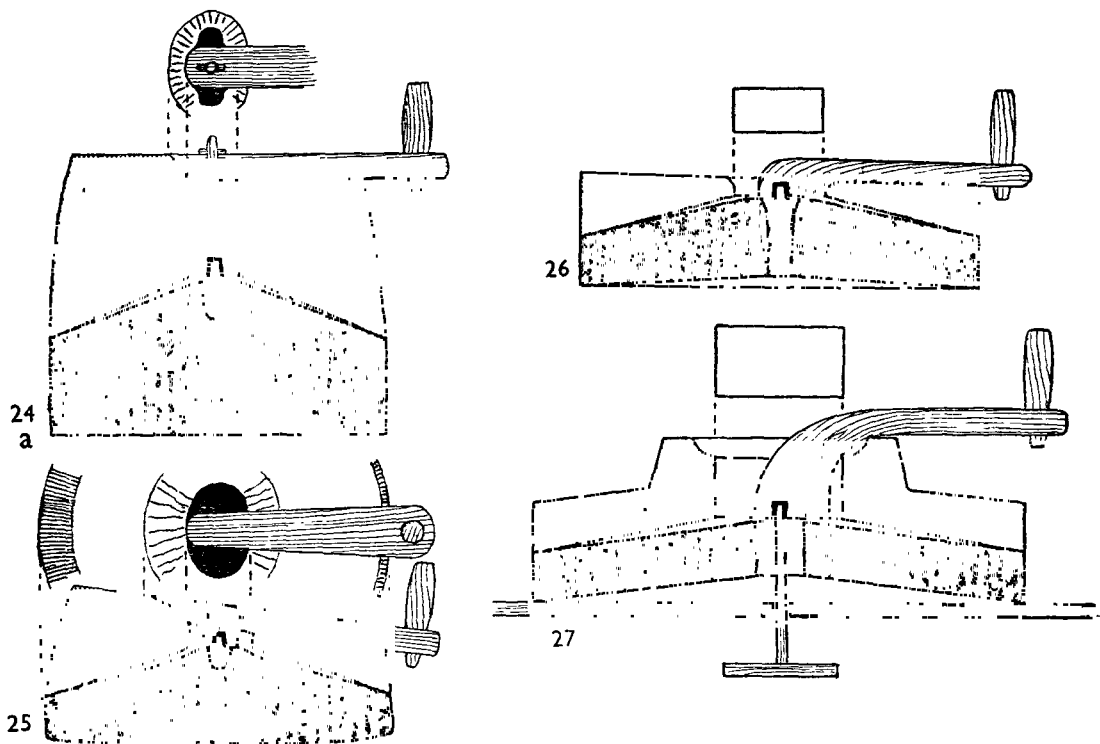
No study of an ancient implement is complete without some experience of its actual use. The writer still hopes one day to fell a tree with a flint axe, to till a patch of ground with a flint hoe, and to reap it with a flint sickle. But before these experiments can be made the vanished wooden parts of the various implements have to be reconstructed from such evidence as is available.

In the case of querns this is not very difficult, as the general principle by which the upper stone was suspended over the lower has not varied in its essentials from the iron fittings of early slave-mills to those of modern mill-stones, while their wooden counterparts which were once possessed by the hand-mills survive in the modern querns of the Hebrides. It is only the adaptation of the principle to individual varieties of quern that may present some difficulty.

In southeastern England there was an unbroken evolution of a single quern-type from the Iron Age down to the latter part of the

MORE ABOUT QUERNS

Roman period. The Sussex Archaeological Society is happily in possession of four querns representing different stages of this sequence, three of them having good dating associations. In two of these implements both upper and lower stones are fortunately preserved unbroken.⁶ These querns will be referred to here as nos. 1 to 4 (PLATES II, III, and FIGS. 24a-27).



FIGS. 24a, 25-7. QUERNS RESTORED AND REMOUNTED

- 24a Quern no. 1—The Trundle (before 50 B.C.).
- 25 Quern no. 2—Iver, Bucks (?) (type, first century A.D.)
- 26 Quern no. 3—Hassocks, Sussex (prob. second century A.D.)
- 27 Quern no. 4—Thundersbarrow Hill, Sussex (fourth century A.D.)

Lower stones, darker stippling ; partly diagrammatic. (Lewes Museum).

Here was an ideal series for studying the corresponding development of the vanished wooden parts. The evidence for this rests mainly

⁶ These four querns are illustrated in my former article, loc. cit., figs. 14, 17-19 (p. 143), and plate II, 5, 6.

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on the indications afforded by the shapes of the stones, and partly on the realization that just as the stones have undergone progressive development, stage by stage, so we may expect the wooden parts to have undergone a parallel development, each stage evolving from the preceding.

First of all the missing parts of the broken stones (nos. 1 and 4) were restored with cement, much in the same way as the missing parts of pots are made up with plaster. Quern no. 4 lacked a lower stone altogether, but this was supplied in cement, based on another specimen of the same type.

Three wooden parts are ordinarily needed : a spindle, a rynd, and a handle.

The *spindle* is a short vertical rod which either projects from a socket in the centre of the lower stone, or, in later querns, passes right through the lower stone to rest on a board or moveable lever below it (pp. 144-5 of former article).

The *rynd* is a bridge which is jammed across the lower part of the aperture in the upper stone, having a little socket on its lower face which rests on the top of the spindle. It thus carries part of the weight of the upper stone, but it and the spindle must be mutually adjusted so that the outer edge of the upper stone rests lightly on that of the lower stone. The rynd must not block the aperture of the upper stone entirely, but must allow room for the entrance of the grain.

The form of the *handle* has to be considered on the merits of each case, but it seems that the familiar handle standing in a vertical socket near the outer edge of the upper stone is a late feature which does not normally occur till after the close of the Roman period, except in the case of the imported German lava querns.⁷

QUERN NO. 1 (FIG. 24a and PLATE II) from the Trundle, Sussex (before 50 B.C.). Here the aperture in the upper stone takes the form of a cylindrical pipe, enlarged on each side by a long groove or channel which extends throughout the whole thickness of the stone. From this we infer that the rynd must have taken the form of a wooden cylinder which plugged the whole length of the cylindrical pipe, while the two

⁷ Exceptions to this rule may occur : a 3rd-4th century quern (fragment) from Thundersbarrow Hill, Sussex, originally 30-32 inches in diameter and $3\frac{1}{4}$ inches thick, preserves part of the socket for a vertical handle (*Ant. Journ.* 1933, XIII, 123-4). In this case the diameter of the quern was sufficient to allow a handle so placed to exert the necessary leverage ; in most Roman querns the diameter was so small that the handle had to extend radially beyond the edge of the stone.

PLATE I



DEVELOPMENTAL SERIES OF RESTORED QUERNS IN THE MUSEUM OF THE
SUSSEX ARCHAEOLOGICAL SOCIETY, LIAVIS

PLATE II



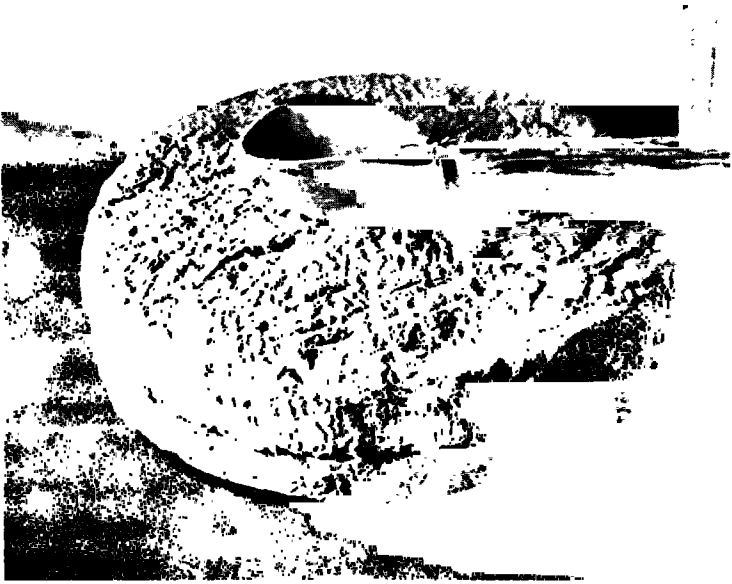
QUERNS RESTORED AND MOUNTED

Above . Quern no. 1, from the Trundle, Sussex (before 50 B.C.) (Stones restored with cement)
Below . Quern no. 2, from Iwer (?). (Type, first century A.D.) (Stones complete)

Ph. E.C.C.



PLATE III



QUERNS RESTORED AND MOUNTED

Above . Quern no. 3, from Hassocks, Sussex (2nd century A.D.) (Stones complete)

Below . Quern no. 4, from Thundersbarrow Hill, Sussex (4th century A.D.)
(Stones restored with cement)

Ph. L.C.C.



PLATE IV



QUERNS RESTORED AND MOUNTED

Upper Quern no. 5 (Pre-Roman Wessex type (no history))
Lower Quern no. 6 (Flat disc type (H. bridge in 7))

Ph. F. C. C.

MORE ABOUT QUERNS

channels served to admit the grain. A prominent radial groove on the flat top of the stone indicates the position and character of the handle ; this projected outwards and very slightly upwards, while its inner end was secured by attachment to the top of the rynd. Without such attachment there would be nothing to keep the handle in place ; moreover this arrangement accounts for the extension of the rynd up to the top of the stone.

A radially projecting handle seems to be reminiscent of the levers to which donkeys or slaves were attached in the case of the big urban mills of Greece and Rome, but in a quern it is a most unhandy thing to use. No continuous grip can be kept on it as the quern revolves. One may legitimately conclude that it was originally provided with an up-standing grip, either by using a naturally bent piece of wood or by inserting a second piece, as in the illustrations.

QUERN NO. 2 (FIG. 25 and PLATE II), said to be from Iver, Bucks (type, first century A.D.). In the course of probably less than two centuries the local quern-type has lost more than half of its height, but otherwise remains very similar. The peculiar form of the aperture in no. 1 has been softened down to an oval in no. 2, while its upper part has been widened out to form a funnel or hopper to hold the grain. The radial groove for the handle is unaltered, and joins the central aperture in the middle of one of the longer sides of the oval. Thus the handle must have united with the rynd as before, but owing to the reduced thickness of the stone the rynd assumes the form of a modest bridge across the middle of the oval aperture at its lowest part. This bridge-like form and low position is thenceforth characteristic of most querns, and, translated into iron, is found in all large mill-stones down to the present day.

QUERN NO. 3 (FIG. 26 and PLATE III), from Hassocks, Sussex (probably second century A.D.). Now the upper stone has become so thin that it is no longer possible to sink the handle in a groove on its flat upper surface, while the central aperture is a mere window. There is no visible means of attaching a handle in any ordinary manner, but two considerations supply the key to the problem : (1) the handle having been radially placed hitherto, is likely to have still been similarly placed in this specimen, even in the absence of a groove for it ; and (2) it is a noticeable fact in the local quern-series that at the developmental stage in which the handle-groove disappears the central aperture becomes rectangular instead of oval. This can only mean that the radial handle now lay on top of the upper stone, and that its inner end

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curved down into the central aperture, the rectangular cut of which enabled the handle to get a grip on it like a spanner on a nut. In this case the end of the handle, jammed firmly into the aperture, presumably took the place of the rynd and made direct contact with the spindle.

The absence of a hopper is a practical defect in this quern, and in view of the subsequent development of a projecting stone hopper in the next type (no. 4), it is possible that no. 3 may have been provided with (say) a leather funnel, attached to the end of the handle, as shown in the photograph. This, however, is merely conjectural.

QUERN NO. 4 (FIG. 27 and PLATE III), from Thundersbarrow Hill, Sussex (fourth century A.D.) Here the principal new features are the projecting stone hopper and the downward-sloping upper surface. The central aperture is still rectangular, which implies a similar handle-fitting to that of no. 3, but as the rim of the hopper is unbroken by any gap left for the handle to pass through, it follows that the latter must have curved over the rim, as in the illustrations. Here again the inner end of the handle is likely to have served as the rynd.

All four of these querns have been mounted and put into working order in the manner described, and are exhibited as part of a developmental series of restored querns in the Sussex Archaeological Society's Museum at Barbican House, Lewes (PLATE I).

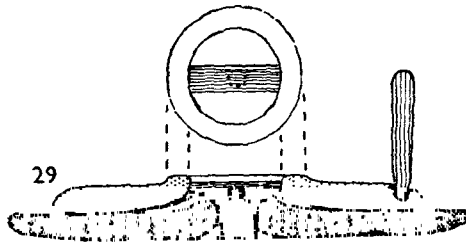
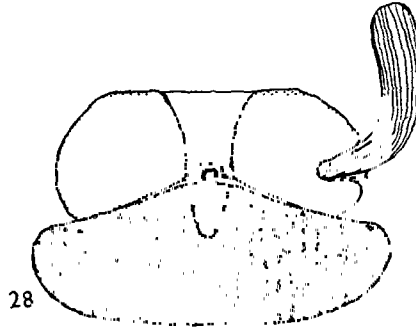
This is, of course, merely a local series, and its features are not by any means universal. But it may furnish hints and suggestions as to the methods by which other types may have been mounted. In the Wessex type the handle, which was planted in a horizontal socket in the side of the upper stone, did not make contact with the rynd. The derivatives of this type, which appear to include the Hunsbury and puddingstone varieties as well as those of Scotland, maintain the horizontal handle-socket until, as a result of progressive flattening of the upper stone (in the Scottish series) the socket gradually becomes more and more vertical.

Querns nos. 5 and 6, which were recently given to the writer by Mr W. J. Hemp, F.S.A., illustrate the beginning and end of this series. Both have been mounted by the writer, as described below, and work effectively.

QUERN NO. 5 (FIG. 28 and PLATE IV) is of pre-Roman Wessex type, and has been made from two rounded boulders of elliptical plan; the longer diameter of each is shown in the section. The hole through the upper stone is roughly circular in plan, and cannot therefore have been plugged with a cylindrical rynd, as in the contemporary Sussex

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type (no. 1). Many Wessex querns, however, have a similarly shaped aperture to those of Sussex. But seeing that in the Wessex type the handle is always set in a lateral socket and does not come into contact with the rynd, there is no need for the latter to extend up to the top of the aperture, as in the Sussex specimen. It follows that in the present example the rynd need have been no bigger than the little bridge shown in the figure, and also in PLATE IV, 2. A handle, made from a curved



FIGS. 28, 29. QUERNS RESTORED AND REMOUNTED

- 28 Quern no. 5—Pre-Roman Wessex type (no history).
 - 29 Quern no. 6—Flat disc type (no history—Hebridean ?)
- (Both in the writer's possession).

oak-branch and fixed into its socket with wedges, has proved perfectly serviceable.

QUERN NO. 6 (FIG. 29 and PLATE IV) is of the flat disc form, and should be comparatively modern—perhaps Hebridean. Except for a slight cone at the centre of the lower stone the grinding surfaces are quite flat. The upper stone has a wide circular hole which covers the cone, and would have been bridged by a relatively long and narrow rynd, as illustrated. The upper stone is of smaller diameter than the

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lower, and has three shallow sockets for a vertical handle at roughly equal intervals round the circumference.

Many complete upper stones are found in which there is no visible handle-socket of any kind, and yet the central aperture may be circular. Here, it seems, we must fall back on guesswork as to the method of mounting, and perhaps the most plausible suggestion is that in spite of the shape of the aperture the inner end of a radially placed handle may have been jammed into it, after the manner of nos. 3 and 4 described above. But any method that may have been adopted in such querns must have been unsatisfactory.

In some later querns, and all modern mill-stones, slots are cut in the under-surface of the upper stone on either side of the central aperture to accommodate a narrow bridge-like rynd which spanned the aperture. In such cases the rynd was of iron. Dr Hencken found such an iron rynd in the ninth century fort of Cahercommaun, Co. Clare.⁸

One curious Roman quern from Middlewich (Cheshire) has a stone rynd, of one piece with the upper stone.

The wooden parts, reconstructed as described above, proved to be thoroughly practical when put to the test. All four restored querns were used for grinding wheat, in order that experience might be gained, for without such experience no instrument can be properly understood. If one does not measure standards of efficiency by those of modern machinery, one may say that querns nos. 2, 3 and 4 worked very satisfactorily. No. 1, however, failed because the stones did not fit one another very well, owing to faults in the cement restoration. As a result most of the grain ran through between the stones too quickly, and emerged unaltered, though a small proportion of it was ground.

The upper and lower stones should fit so that they are in light contact all round the outer edge, but nearer the centre there should be a little space between them. When a handful of grain is fed into the central aperture some of it immediately passes into this space, and as the individual grains work outwards towards the periphery they lift the upper stone slightly off the spindle; in this way they take the full weight of the revolving stone. It is here, near the outer edge, that the grinding is done, but the slight lifting of the upper stone inevitably allows a few whole grains and a good many partly crushed grains to escape round the circumference. After this the upper stone settles down as the remaining grains are crushed smaller and smaller, and if

⁸ H. O'N. Hencken, *Cahercommaun* (Roy. Soc. Ant. Ireland, 1938), p. 49 and fig. 29, no. 698.

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for the time being no more whole grains are fed in to the quern, really fine flour is produced. If, however, the quern is worked empty for too long, grit from the stones may get into the flour. (Cement-restored querns should not be used if the flour is to be used for subsequent baking !)

As the meal emerges all round the circumference of the stones some provision needs to be made for collecting it in as clean a condition as possible. This meal consists of a mixture of fine flour, partly-ground grains, whole grains and bran. The writer's practice was to sift this, and re-grind the residue, the process being repeated as often as might be necessary until nothing but bran was left in the sieve. In the case of wheat that had not previously been dried, it took from half to three-quarters of an hour to grind one pound, sifting and re-grinding 8 or 9 times, the final proceeds consisting of about 14 ozs. (or 87.5 per cent.) of fine wholemeal flour, one ounce of bran, and one ounce on one's clothes. If the ancient peasant was not so particular about the fineness of the flour the process of grinding need not have taken so long ; in any case practice no doubt made perfect, then as now. If he ' bolted ' his meal (I refer to him as miller, not as consumer) he could have used a piece of loosely woven cloth as a sieve.

As regards the relative efficiency of the different querns, no. 1 has already been excused from competing on account of faulty cement-reconstruction ; nos. 2 and 3 were about equal in efficiency ; while no. 4 had definite advantages in being wider, and having less steeply sloping grinding surfaces, as a result of which the grain was not hurried out of the quern quite so prematurely.

The flour produced by nos. 2 and 3 made excellent wholemeal scones, upon which a large meeting of members of the Sussex Archaeological Society were regaled at a demonstration in 1937.

There is, however, evidence that both before and during the Roman period—as well as in the Hebrides in recent times—corn was usually roasted before being ground. This makes the grains more brittle and less liable to be crushed or flattened. Professor Hatt found remains of coarse-ground barley on one of his sites in Denmark, and was able to show by the angular fragmentation of the grains that it had been roasted before being ground—a conclusion which he confirmed by the experimental grinding of barley in an old quern.⁹ It

⁹ ANTIQUITY, 1938, XII, 151-2. On p. 152 a printer's extraordinary ' mishap ' has made nonsense of the second line, which should read : ' When dried in an oven there was less flattening but no angular fragments '. (See also p. 365 of the same volume.—EDITOR).

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therefore became desirable to compare the efficiency of one of our querns when it was used for grinding wheat that had been roasted. Some wheat (16 ozs.) was first slowly dried and then roasted till it darkened slightly in colour and began to give off an irresistibly appetizing aroma. This reduced its weight by loss of water to 14 ozs. When cold the grain was ground in quern no. 3, with greatly increased efficiency. After putting the grain through the quern only twice the 14 ozs. of grain yielded 13 ozs. (or 93 per cent.) of flour in a few minutes, with negligible residue.

In conducting this last experiment the writer has had the benefit of the experience of a lady who, born in the Isle of Lewis, spent her youth in the remote island of Foula (Shetland), where she used to grind the home-grown corn on the domestic quern.¹⁰ She expressed appreciation of the efficiency of the Roman quern (no. 3), and was able to advise as to such details as the degree of previous roasting, the speed of turning the quern, and degree of fineness required in the meal according to the purpose for which it was ground. She also superintended the grinding of specimens of oats and barley, where the main difficulty is the separation of the husks from the grain. Previous drying is necessary for this, as it hardens the grain and loosens the husks. One pound of oats became 13½ ozs. after drying, and yielded 12¾ ozs of oatmeal ten minutes later, after being put twice through the quern and sifted. A further sifting through butter-muslin removed the tiny spicules of rolled husks which pass through the mesh of a fine wire sieve. Similarly, a pound of barley became 14¼ ozs. after drying, and after grinding three times yielded 8 ozs. of fairly fine meal, and 6¼ oz. of coarse meal and husks. My instructress insisted on reserving the latter for a kind of porridge, and did not approve of grinding barley at all fine. In any case it is a much more resistant grain than wheat or oats.

Previous drying and roasting of grain over a pit containing braziers of charcoal was the normal procedure in Foula. I also learned that large querns might have two handles, in which case two women would share the work, but as they could not make the quern revolve without continually changing hands, they resorted to a backwards-and-forwards motion with each handle in turn, the upper stone thus doing a half-turn in opposite directions alternately. In this connexion Mrs Macleod Banks, of the Folklore Society, has drawn my attention to a Gaelic riddle of a type which usually refers to domestic utensils; in this

¹⁰ See plate III of former article.

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case she suggests that the reference may be to a two-handled quern : ' An old woman in the corner, spokes through her two eyes, and she grumbling '.

Querns nos. 5 and 6 were also tested for their efficiency in grinding. With no. 5 (Wessex type) $12\frac{1}{2}$ ozs. of roasted wheat yielded $9\frac{1}{2}$ ozs. of medium and $1\frac{1}{4}$ oz. of coarse meal in 15 minutes, after passing three times through the quern. The medium meal, when bolted through fine butter-muslin, gave $2\frac{1}{4}$ ozs. of very fine flour of a pale straw colour—one of the effects of previous roasting. When the hopper of this quern was subsequently filled up with coarsely ground meal, it passed through extremely slowly, and the resulting flour was almost as fine as if it had been bolted through butter-muslin.

The flat disc quern (no. 6) gave a very similar yield with $12\frac{1}{2}$ ozs. of roasted wheat, viz., $10\frac{1}{2}$ ozs. of medium and $1\frac{1}{2}$ ozs. of coarse meal in 15 minutes, after passing twice through the quern. As the lower stone of this specimen is larger than the upper, most of the meal lay on the flat peripheral portion instead of falling off the edge, and so came in for more grinding than in the case of the other quern.

THE PHILOLOGY OF QUERNS

Another most suggestive aspect of the study of an implement is a consideration of the names by which it has been known in the ancient and modern languages of Europe. Properly studied, words can be as instructive as material types. In the present case the significance of the ancient names is not yet fully apparent.

These fall into two groups, corresponding to our words ' mill ' and ' quern ' respectively.

The first is South European, and is represented by Greek $\mu\acute{\upsilon}\lambda\eta$ and Latin *mola*, *molere*, from a primitive root seen in Sanskrit *mar*, to grind. No sense of spinning or turning is implied, and the Homeric $\mu\acute{\upsilon}\lambda\eta$ was always a saddle-quern (compare our ' molar teeth ' or ' grinders '), but the Greek term was also applied to rotary mills of the second century A.D. The Latin *mola* seems to have been applied to any kind of mill, though no specific references to saddle-querns are identifiable in Latin literature. The late Latin (fourth century) *molina* is the source from which the various north European words have been borrowed ; such words include English ' mill ', German *Mühle*, Gaelic *muileann*, Welsh *melin*, etc. The Latin *molina* and its north European derivatives seem to have been applied solely to large mechanical mills, including

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watermills and windmills. In English the quern was not called a 'hand-mill' till the seventeenth century.

The second group is north European, and comprises words in the Teutonic and Scandinavian languages more or less closely resembling our 'quern', and other related words in the Baltic and Slavonic languages. In Celtic we have Old Irish *bró* and Welsh *breuan* which are considered to be normal derivatives from the same root, Celtic *b* corresponding with Teutonic *k*. If this is so, then this root that was common to all these north European languages at so early a date must have been applied originally to the saddle-quern, and only later to rotary querns. Thus the word 'quern' has no more essentially a rotary significance than the word 'mill', and it is only a coincidence that a totally unrelated Welsh word *chwyrnellu* means to whirl or spin. It is possible that our words 'grind' and 'corn' may belong to the same root as 'quern'.

ACKNOWLEDGMENTS

The writer gladly acknowledges the kindness of those responsible for the care of the querns described here, in granting permission for them to be illustrated. Thanks are due to the Curators of the Museums at Shrewsbury, Northampton, Leicester, Luton and Buxton, and also to the Council of the Sussex Archaeological Society, by whose permission the querns at Lewes were restored, remounted and used for the experiments here described.

Wiltshire Place-names

by H. C. BRETNALL

WOULD Charles Lamb have put Place-name Books on his Index of *biblia a-biblia*—books that are no books? He thanks his stars for the catholicity of his taste, but place-names make broken reading. Some degree of local knowledge is ordinarily required to give the subject zest. *Blakesmoor* might have interested him a while. (Was the s ‘manorial’ or ‘inorganic’?) Whether he would have turned many other pages of the H—shire volume is doubtful.

But Lamb belonged to an age that was barely conscious of its place-names in anything beyond their directory use (and Directories he specifically bars). So far as it was practised at all, their interpretation was still an art, for which an ingenious imagination, coupled perhaps with a smattering of some ancient language, sufficed. Thus Stukeley in the eighteenth century could derive *Hackpen* from the Chaldee, or Duke a hundred years later find a Hebrew origin for *Avebury*, to suit preconceptions of their own. But perhaps these instances are unfortunately chosen, since even the editors of the Place-name Survey can make no final pronouncement upon either name. A later generation, with more historical sense but little more plausibility, could explain *Martinsell* as *maerthorn’s-hill* or *Preshute* as *près-château* from its proximity to Marlborough’s Norman castle. The value of charter evidence was beginning to be recognized, as by Canon Jones in Wiltshire, but for the majority of those who felt the need of early forms at all the blunderings of Domesday clerks were good enough. Only in the present century has the art become a science based strictly on the collation of the earliest available forms. Once that requirement was appreciated a host of fond conjectures were consigned to the rubbish heap. That they have not all yet reached their destination is no fault of the English Place-name Society.

The part played by the Swedes in the development of English toponymology (if the word may be allowed) is very remarkable. We may hesitate to attribute it in the first instance to the attractions of our island; Dr Zachrisson indeed has some shrewd things to say about the retrogression of English standards of domestic comfort since the Roman occupation. We may rather suspect that it had its origin in the examination statutes of the Swedish universities. But whatever the ultimate cause, we owe a debt of gratitude to that group of philologists

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who have made our place-names their particular study and brought to its prosecution what our insular theorizing has too often lacked, a present sense of our continental origins and the experience gained in continental fields of inquiry. In this county, if we exclude the modest *Notes on Wiltshire Place-names* published by J. C. Longstaff in 1911, the first large-scale treatise on the Wiltshire material was Dr Ekblom's *Place-names of Wiltshire*, which came from Uppsala in 1917. The number of early forms collected in that volume was remarkable, but it suffered perhaps from an excess of philological apparatus, which the editors of the Place-name Survey are careful to eschew. When 'mutations' and 'inorganic consonants' and 'OFrench sound laws' are flying, the ordinary reader takes cover till the conclusion emerges. But all who are interested in place-names must acknowledge their debt to Dr Ekwall, and in particular for his *Dictionary of English Place Names* published by the Oxford Press in 1936. Let no one, however, suppose that the *Dictionary* has rendered the further activity of the Survey unnecessary. There must always be need for that detailed regional examination which takes account of local conditions and minor names, and can find space for the discussion of particular problems.

The present volume¹ saw the light in the dawn of war and might well have proved the last—for a while—of the county surveys which have appeared with such exemplary regularity. Nevertheless it has been followed by another, compiled however under conditions of increasing difficulty which make the immediate future of the Survey a matter of no little concern. It is gratifying to learn that the work on two more counties at least is well advanced.

The names on the title-page are a warrant for the contents. In this series alone Professor Stenton and Sir Allen Mawer have each collaborated in the surveys of ten counties, and Mr Gover in those of seven. Their technique is fully developed, the presentation as attractive as the Cambridge Press could make it, and that is saying much. The editors' wide experience is our security that no place-name soluble on legitimate lines will remain unsolved. That the information on any county is complete, they would be the first to deny, and the *Addenda et Corrigenda* which precede the main business of each volume are at once the acknowledgment and the amends. Sixteen counties have been published since the Buckinghamshire volume appeared, yet the

¹ ENGLISH PLACE-NAME SOCIETY, volume XVI. *The Place-names of Wiltshire*. By J. E. B. Gover, Allen Mawer and F. M. Stenton. Cambridge, at the University Press, 1939. pp. xli, 547. 22s 6d.

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additions for that and each following county still trail like meteor-swarms, now thick, now thin, across the annual path of the Survey. The method has its drawbacks, but how otherwise are the constant accretions of knowledge to be recorded ?

Wiltshiremen will be grateful for the abundant information now made available and for the care that has gone to the searching and sifting of the formidable amount of material underlying it. One may doubt indeed whether a county, though probably the inevitable, is also the ideal unit for such a survey. Dialects and customs know few county boundaries, and Wessex has a unity which transcends them. Some of the historical problems which place-names should help to elucidate tend only to be obscured by the blinkers of a county boundary. Our editors, it may be noted, are generous in their limitations. Parishes that have been transferred to other counties such as Damerham, Plaitford (but not Bramshaw) and Kemble (but not Poulton) are still treated as parts of Wiltshire while, on the other hand, Kilmington, formerly in Somerset, and those parts of Shalbourne which once belonged to Berkshire are not excluded from the survey.

The arrangement of the parishes under their hundreds rather than in their alphabetical order is based on history but hardly on convenience. It does little to maintain local connexions, and it involves a constant use of the very admirable index. Cross-references between the parishes in the main part of the book and in the field-name section would obviate more use of the index, but the printing of the field-names along with the map-names under one heading would be still more convenient. The order of the hundreds themselves has doubtless an explanation, but it is nowhere given. It is not alphabetical, nor does it correspond, for instance, to that adopted in Britton's *Wiltshire*. It resembles a capital G traced against the clock and ending in a complicated crossbar. The 'ragged' hundreds, of which the editors recognize twelve, though there were formerly still more, are disentangled only at the cost of any local associations the arrangement may be intended to retain. Nowhere however, it is fair to add, except in Sussex has the Survey had to deal with hundreds so confused.

One more point and this cavilling shall cease. It would have seriously overloaded the index to include in it the field- and minor names, but if in the invaluable preliminary sections (a), (b) and (c) still more room could have been found for the mention of parishes, it would have added greatly to their value. Repeated search in section (d), a formidable task, for the *wegilbergh* referred to in section (a) has failed

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to discover where it lay, a failure for which the date of its occurrence is no real compensation. *Hweogolbeorg* would mean 'wheelbarrow', and the suggestion of a disc barrow is strong.

The example is not taken at haphazard. It bears upon an examination of the *-beorgs* and *-burhs* of Wiltshire which it is one of the many merits of this volume at last to make possible. The material for it is largely buried among these minor names. *Beorg*, which as a second element usually becomes *-borough* in Saxon districts, indicates a mound, and usually a barrow. For other elevations our ancestors had other words. They used their vocabulary, which was limited, we are told, in this region, accurately according to their lights, but we need not suppose them to have received much illumination from the study of archaeology. If a natural mound had the shape of a barrow, it is not unlikely that they would describe it by the same word, though it is not easy to find such a use of *beorg* in Wiltshire.²

About a score of *-borough* forms are traceable by diligent search in this volume, and there are certainly more. Goldborough, for instance, is a field-name in Preshute, and Millborough a barrow in Newton Tony. What degree of familiarity was necessary to change a 'barrow' into a *-borough* it would be interesting, but not easy, to determine. It always happened when the name was transferred to a settlement as has occurred in nine traceable instances in Wiltshire. Of these four are farms, one (Bedborough) a hamlet, three villages (Brokenborough, Wanborough,

² Three instances from other counties are quoted in the Introductory volume of the Survey, part I, p. 157: *Black Barrow* in Broomy Walk, New Forest, but this is called a tumulus in the one-inch Ordnance map of the Forest; *Black Barrow*, Isle of Wight, but, if this is the one in Mottistone, the one-inch map again prints the name in the type reserved for (non-geological) antiquities; *Creech Barrow* in Purbeck, which Murray's Guide described as 'a conical tertiary hill, almost volcanic in outline, towering above all the other heights'. Here we seem to have the very thing, a natural hill of barrow form—but the Ordnance map shows a tumulus on its crest. Nevertheless there may be genuine instances, and perhaps *Charlbury*, formerly known as *Shalborough*, or *Shelbarrow Hill* is one. Hippius Cox (*Green Roads of England*, p. 143) speaks of 'the three rounded summits of Charlbury (*sic*) Hill, looking like great tumuli'. He seems to include Lammy Down, but on none of these summits does any barrow exist today. Hoare (*Anc. Wilts.*, II, 46) mentions that several barrows are shown here on old maps of Wiltshire, but that they are really natural mounds. He is probably referring to Andrews and Dury's map of 1773. *Black Barrow* in Broomy Walk is a natural hill like King Barrow, near Cripplesley, 6 miles W. by N. of it across the Arm. Both are now correctly shown in ordinary lettering on the 5th edition of the 1-inch O.S. map. *Black Barrow* in Mottistone is also a natural hill, but there is a large round barrow, formerly unmarked, near it—I write from memory, since my notes and maps are at present inaccessible. There can be no doubt, I think, that *beorh*, like *hlaew*, was occasionally applied to natural hills.—O.G.S.C.]

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Woodborough), and one (Marlborough) has risen to the dignity of a borough in the civic sense. In two of these only does the 'barrow' as opposed to the 'hill' interpretation seem to stand in need of vindication.

The Survey claims Woodborough as a 'hill' name. The reference is apparently to Woodborough Hill, since there is no other in the parish. Seen from any vantage point above the Vale of Pewsey that hill is certainly a conspicuous object. It stands up from a promontory of the lower chalk amid the surrounding greensand, but it does not stand alone. It has a close neighbour of similar size and appearance in the adjoining parish, which bears the name of Picked (i.e. Peaked) Hill.³ If the one seemed a *beorg* to the people of Woodborough, why did their neighbours of Wilcot prefer to call the other a *hyll*? The few trees that either hill bears today are none too happy in their situation. On the other hand we are told (p. 503) of several fields in *-hurst*. It seems possible that the woodland which once covered them covered a barrow too. If it did not, a wooded hill is still to find.

For Brokenborough the editors seem to incline to the 'barrow' interpretation, but they are supremely cautious. 'Broken' and 'rough' (*row*) barrows occur in many places, and that explanation is the obvious one in the present instance. But the question is complicated by the passage quoted from the *Patrologia Latina* on p. 54. It contains a professedly Celtic name for this place, *Kairdurberg*, 'quod Saxonice dicitur *Brohamberg* nunc vero *Brokenberg*'. The editors add the suggestion that *dur* in the Celtic represents the *duro-* of Durobriva (Rochester) and means 'stronghold', and there they leave it. *Kairdurberg* is therefore still in play—*Messieurs, faites vos jeux*—so here goes!

It may be remarked that *Kairdur*—'Fortfort', in effect—is not a promising beginning, however the word may have ended before the scribe was mesmerized by the *berg* termination. It is indeed obvious that the text is corrupt. Ekwall in his *English River Names* (under *Doferic*) postulates a diminutive of *dubro* in *-ic* meaning 'little stream'. Might we not use it here and restore *Kairdubric*, 'the Fort on the Lesser Avon'? Brokenborough lies on the smaller (Tetbury) branch of that infant river, the branch which was formerly known (*pace* our editors, who assign the name elsewhere) as the Ingelburne. *Brohamberg* in turn becomes intelligible, if we may assume that a guttural has

³ The same promontory carries a lesser elevation, in Alton Priors, called Burlinch Hill. This seems to be a *hlinc* compound which has escaped the editors' notice.

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fallen out and that the *-berg* would have been *-burg* but for the scribe's obsession. *Brochamburg*, on the analogy of similar forms frequent in this region, would represent *Brochaemeburh*, 'the fort of the brookside dwellers'. The Latin implies that the word is meant to be a translation (*Saxonice*) of its Celtic predecessor, but there is no clear suggestion that Brokenborough was ever known as Brochamburg. What we seem to have reached is an early effort at place-name interpretation. The *Brochaemeburh* form may never have existed save in the imagination of the Latin author, who invented a Saxon equivalent, and that not the most obvious, of the Celtic name as near as possible to the real Saxon name of *Brokenebeorg*. But in that case what had become of the broken *beorg*? Had its existence already been forgotten? And what was it? This is no region of broken hills. It would require an extravagant imagination to apply the term to the Avon valley in this stage or to any conceivable local quarry. The evidence for the name has vanished, but barrows (already 'broken') disappear far more readily than such a cutting.

Of the Wiltshire *burhs*, or *burghs*, we were promised on p. 416 a distribution map. But it was not forthcoming, and in the succeeding (Nottinghamshire) volume the promise is expunged. It could not have distinguished the Saxon from the Celtic *burhs*, and it must have given a wrong impression of the distribution of the hill-camps, since so many of them do not carry *-burh* names. Its omission therefore need not be deplored. In Wiltshire the *-burhs* outnumber the *-beorgs* by about three to one, for there are some sixty of the former, if we include, as we must, the minor names, but omit the fox-earths and the rabbit-warrens, the 'foxburys' and 'coneyburys'. It is obvious that these figures bear no relation to the real proportion of camps to barrows, for Goddard's list includes over 1800 of the latter. Some modern *-burys* indeed derive from *-beorgs*. Perhaps the two most obvious cases are Silbury Hill and the Lugbury long barrow, but there are at least half a dozen others. For some of these alternative forms have existed—Cockleborough for Cocklebury in Langley Burrell, Clinchborough for Clitchbury in Brinkworth and Shalborough for Charlbury in Little Hinton (see note 2). There is also evidence of the rarer reverse process in the alternative Yarnborough for Yarnbury, to which Mr Newall draws attention. The distinction, as is well known, is lost in the Midlands. Borough Hill, Daventry, for instance, carries a camp and not a barrow.

Among true *-burhs* names for which a definite derivation is proposed

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by our editors, descriptive first elements outnumber the personal by almost two to one, and half the persons proposed for the distinction are asterisked, that is, they survive only as the eponymous owners of landmarks or founders of settlements. Now a place-name trail which leads to a personal name with no historical associations inevitably leaves the inquirer with a sense of frustration. If that name is asterisked—it matters little whether the asterisk is single or double—frustration turns to something like resentment. Of course the feeling is unjustified; we are committed to the trail of truth, and truths are often unpalatable.

We cannot pretend to know every name borne by our Saxon ancestors, and it is right that some, certainly mute and apparently inglorious, should enjoy what recognition the speech of succeeding generations has left them. If Ceadela can recognize himself in Chaddenwick, or Tilluc in Tinkley, they are as surely entitled to that fragmentary immortality as Celtic Maildub and Saxon Ealdhelm to their mystic union in Malmesbury—an unregarded outcome of the Synod of Whitby. But need we be so frequently reduced to these hypothetical eponyms?

An examination of the *-burhs* of Wiltshire suggests that personal elements belong normally to the settlements and descriptive elements to the hill-camps, but the rule is by no means inviolable.⁴ Westbury town and Guthred's lonely *burh* (Godsbury in Collingbourne Kingston) find themselves apparently in the wrong categories. Nor is it always easy to distinguish them. In which sense was Malmesbury a *burh* originally? The Celtic *Kaerbladon* appears to have occupied the same hill as the Alfredian *burh*. In any case it is a settlement, and the personal element is well attested. Tisbury became another of Alfred's *burhs*, and we may allow *Tysse* his memorial despite his asterisk. Nor can we fairly withhold it from the ladies whose names are hidden in Alderbury and Heytesbury, though traces of earthworks exist in either parish. Amesbury is a settlement under the walls of 'Vespasian's Camp', a fact which our editors omit to mention. To which then must we look for the origin of the name? Surely to the camp, which Vespasian never occupied. Here again a personal name is clearly indicated, but need it be Saxon? *Ambre*, favoured by the editors, has no independent

⁴ Dr Grundy has analysed the *wics* and *-weorhs* of the charters with interesting results (*Wilts. Arch. Mag.* vol. XLI, p. 344). He shows that, where determinable, 95 per cent. of the *-wics* have descriptive attributes and 87 per cent. of the *-weorhs* personal ones. The two classes of Wiltshire *-burhs* cannot be made to give such clear results owing to the difficulty of deciding in many cases whether the settlement was named from an earthwork or the earthwork from a settlement. Nevertheless a tendency is traceable on which a presumption may be tentatively based.

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record. Aurelius Ambrosius, on the other hand, has as good an entity as Arthur, whose historical existence few would now deny, and tradition associates him with the district. 'Ambrosius' bury' seems a better guess, though it can never be more. Chisbury is another settlement still closer to a camp, and *Cissa's* claims are strong. But this Cissa seems to have settled within the camp, where the present farm stands, and thereby establishes his right to name it. *Budda* of Budbury above Bradford may well have done the same, but little trace of the earthwork now remains. At Ramsbury we might allow Raven his capital letter, for here no camp is now visible. But it is a little suspicious that another *Hremnesbyrig* lies in Uffington not ten miles away, and we may object with Dr Grundy to gentlemen with the Scandinavian name of Raven naming so many Ramsburys. These, with one exception, are all the settlement *burhs* in the county for which a personal element is proposed with any confidence.

That one exception is Badbury, now a tithing of Chisledon. As a settlement we might be inclined to allow it to the *Badda* to whom the editors attribute it. But Badbury is first and foremost a hill-fort, one of many of the name. It is true that Badbury camp is now more commonly known as Liddington Castle, but that must be due to a change in boundaries at some undetermined date.⁵ The persistence of the earlier name suggests that the change is not so very ancient. But there are many other Badburys. One lies in Brixton Deveril, but that is traced to a *Babba* on p. 481; another is an alternative name for Bilbury in Wylve.⁶ Outside this county we find Badbury Rings in Dorset and Badbury Hill, with a 'Danish' camp, in Berkshire. Badby, Northamptonshire, is traced by Ekwall to *Baddanburh*, and there is an earthwork near Baumber, Lincolnshire, was *Baddanburh* and lies high. No wonder Ekwall is driven in his Place-name Dictionary to suggest, on less evidence than is here presented, that Badda may have

⁵ A thousand years ago the camp must have belonged to Badbury. The bounds of Liddington and Badbury at that date are discussed in Dr Grundy's *Saxon Land-charters of Wiltshire* (I, p. 205 and 2, p. 12), but the interpretation has in parts defeated him. They are certainly obscure, but without going into details it may be said that the common boundary to the south seems to become intelligible only if it may be taken east of the camp, not west as the present boundary runs. This transfers the camp from Liddington to Badbury.

⁶ This alternative is interesting. It seems to show a change resultant upon the occupation of the camp by the founder of Bilbury Farm. He may have been a *Billa* as Mr Young suggests (*Origins of the West Saxon Kingdom*, p. 32), but the possibility of a *Biwiliburh* from *Biwili*, the old name of the Wylve land-unit, must not be overlooked.

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been 'a legendary hero associated with ancient camps'. But is it not possible that we have here to do with a generic name of pre-Saxon origin represented in the historic *Mount Badon*?

And what of *Cada*, who had camps in wooded regions, once in Devon and twice in Somerset? In this county, as also in Devon, he runs to *leahs*. There are two Cadleys at least in Wiltshire, in Chute and Savernake, and Cad(e)nham also in forest areas of Wiltshire and Hampshire. *Cadas* in fact has left the name on many parts of the map of England, though whether all the areas were originally wooded cannot confidently be affirmed. It can only be remarked that the proclivity of persons of that name for woodland sites is certainly striking, so striking as to place the name alongside *Badda's* as a candidate for legendary honours, if indeed it is a personal name at all.

Bera, the bear, is an unknown name assumed to explain several place-names in England, among them Barbury in Wiltshire. If the local *Bera* ever existed, he lived presumably on the site of Barbury Castle Farm, but that remote site can have had few attractions for a Saxon. It is sometimes forgotten that the brown bear survived in England at least as late as the eighth century, and the animal seems in this case as likely as the man. But is that all the story?

It is remarkable that all the Saxon battlefields have Saxon, or partially Saxon, names. If *Searobyrig* represents, as Bradley suggested and our editors seem to approve, a rationalization of the native name, for Salisbury, may the same not be true of *Beranbyrig*, though we cannot recover its native form? Some name must presumably have been given to the battle very soon after it was fought, and neither bears nor Saxon settlers can well have been in possession. Only a sophisticated age can expect its children to memorize *Elandslaagte* or, to take a recent case, *Halfaya*. The men who fought there had simpler names for them: 'Hell and Slaughter' and 'Hellfire corner' served their turn, and so it may well have been with their ancestors, whose humour ran in less monotonous channels.

Traps for the unwary are as frequent in Wiltshire as elsewhere. Slaughterford, Sugar Hill, Tinhead, Swanborough, to mention only a few, seem to explain themselves—until their historical forms are traced. We can imagine the sort of romance that has been woven round them. But romance on a surer basis is not lacking. The editors have unearthed it in the unpromising Drake North of Damerham, which conceals some story of a dragon's hoard, and in the forgotten *Nykerpole*, the pool of the water-demon, in Mildenhall. They record also, but obscurely

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(p. 441), the lost *Grendlesmere* in Ham, the haunt of the marsh-monster of Beowulf. They do not record Dr Grundy's discovery⁷ of a form of Hodson in Chiseldon which shows its derivation from Hordestan, 'the treasure stone'

Traces of heathen mythology are noted as frequent, but it should be pointed out that they are much more frequent in the north of the county than in the south. There is a valley of the Marlborough Downs nameless now but once called Woden's Dean. His dyke protects it on the north, his gate gives access on the east, and his barrow dominates its western skyline as the supine form of Cuchullin dominates the southern shore of Carlingford Lough. But the hand of Birinus has been heavy on Woden's grave, and now it is known as Adam's.

It may be suspected, though the editors do not countenance the suspicion, that the names of the summits behind Wansdyke in this region conceal unidentified Celtic elements. Years ago Story Maskelyne offered an explanation of 'Tan' Hill which went behind St. Anne to the Celtic word for fire (as in *Beltane*), and if we suspect Birinus again—not the man, of course, but the movement of which he was the honoured protagonist—we have many Breton analogues to bear us out. We need not put it past a Christian mission, struggling to uproot the tangled growth of Saxon and Celtic paganism, to persuade the local inhabitants that when they said Tan they really meant St. Anne or to accommodate their August ceremonies to the date of her festival and turn them into Tan Hill Fair. Milk Hill too seems an unlikely name for the highest point in the county, if it means, as the editors tell us, 'the hill of good pasturage' for milking herds. It is arable now, and the presence of a Saxon 'Oxenmere' beside its summit suggests that it was arable at least a thousand years ago. Some derivative of the Celtic *mel* (Welsh *moel*), 'bare hill top', would seem more fitting. The form *meloc* is quoted by Ekwall from Cumberland (*s.v.* Watermillock) in the sense of 'little fell' and the tautology of 'Meloc Hill' is very much in keeping with the Saxon usage of Celtic words, as may be observed in many instances.

But the examination of individual names offers little of sustained interest to the casual reader, whatever desultory delights it may hold for the addict. For the connected story, or what there is of it, we must turn to the Introduction, where the editors set out the historical

⁷ Grundy, *op. cit.*, I, p. 204. They seem also to have missed his valuable list of Wiltshire place-names, quoted above in note 4. Some of his suggestions there might perhaps have been considered.

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conclusions they base upon the place-name evidence. What light does it throw upon the origins of Wessex? For that vexed inquiry Wiltshire is indeed the crucial county. Did the Saxons enter it from the south with Cerdic, as the Anglo-Saxon Chronicle asserts, or from the north as well—with Ceawlin, as Mr Young would persuade us—or from the east up the Thames valley? Did they enter early or comparatively late?

‘In Wilts’, says Mr J. N. L. Myres,⁸ ‘the only group of early names is in the north, suggesting penetration from the Thames and the Kennet’. As to the direction our editors have nothing to tell us, unless indeed their answer is to be inferred from their pronouncement on the matter of date. ‘The place-names’, they say, ‘show very few of the ancient features distinguishing regions of primary settlement. . . . Even without the definite evidence of the *Chronicle*’, they conclude, ‘the character of the place-names of Wiltshire would suggest that the settlement of the county did not begin until the sixth century was well advanced’. There are, it is true, the *hams*, usually accepted as evidence of early, if not of primary, settlement. They are plotted on a distribution map in the pocket, but identification is not always easy, and even when located, the distinction between *hams* and *hamms* is notoriously obscure. The *hams*, perhaps, are best not called in evidence, and as Mr Myres did not quote his ‘early names’, we have nothing to oppose to the opinion of the editors. The prevalence moreover of Celtic names must be allowed its weight, suggesting as they again observe, ‘that the Saxon occupation of Wiltshire did not begin until the first and most devastating phase of the English invasion was over’.

If the check at Mount Badon called a halt to that first phase, and if, as Whitaker in his *History of Manchester* first suggested, we may identify the site of that siege with Badbury Camp (*Baddanbyrig*), much would seem to be explained. The strategic importance of Badbury, or Liddington Castle, would be enormous. Dr Grundy has shown convincingly that the movements of Saxon armies were confined to the pre-existing roads of the country, and Badbury commands all the routes from the Upper Thames settlements into Central Wiltshire. The Ridgeway and the Icknield Way converge on Badbury in the fork of the Roman roads to Winchester and Salisbury; but these latter were denied to the Saxons, since the Britons still held Cirencester and, *ex hypothesi*, Badbury. No army advancing from the Dorchester region

⁸ *Roman Britain and the English Settlements*, p. 401, footnote

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could afford to leave that stronghold un-reduced.⁹ So far from reducing it, the Saxons of the Thames valley were themselves routed and convinced for a whole generation that the Wiltshire grapes were sour. Our editors, misled perhaps by their parochial approach, do not recognize the alternative name of Liddington Castle, but they do record that Aubrey knew it as Battlebury, which may be significant.

The stock of the Anglo-Saxon Chronicle, despite its evenly spaced dates and Celto-Saxon kings, is rising again. There was a time when the conquests of Cerdic and Cynric were relegated to the realm of fiction, and archaeology seemed to suggest an earlier advance into Wiltshire from the Wash. That advance has now been stayed in the Vale of White Horse, where the Ginges, Lockinges and Balking seem evidence of primitive settlement. A later approach from the Hampshire Avon once again commands a cautious acceptance—so cautious that Mr G. M. Young, in his *Origins of the West Saxon Kingdom*, would appear to surrender the victory at Barbury to the West Saxons of the Upper Thames, limiting the conquests of the southern forces somewhere near the line of Wansdyke. This most interesting suggestion restores the *Chronicle* account as an ill-edited conflation of two separate traditions. If Mr Young's theory may be accepted, it will perhaps help to explain the puzzling tradition that the great bottom running east and west through Savernake Forest was once the boundary between North and South Wiltshire, for that bottom lies, at any rate in part, upon the line of the dyke.

Of course, neither Mr Young nor the editors of this volume would have us believe that Wansdyke was a Saxon *haga*. Our editors make it clear that its origin was as great a mystery to the Saxons as was Avebury to the Druids. But it is permissible to see in its evident relation to the Kennet some connexion with the dangers that threatened its constructors from the direction of the Thames Valley; and the exceptional dimensions which it attains between Morgan's Hill and Savernake point to a still more intimate relation with the Ridgeway as the likeliest line of hostile advance.

But to discuss the purpose of the Wiltshire dykes would lead to speculations which have nothing to do with place-names. It is one of the chief merits of this volume that it provides the material for speculations of the most diverse kinds; it is an even greater one that its editors resist so resolutely the temptation to embark upon any themselves.

⁹ The siege is usually represented as a siege of the Saxons by the Britons, but nothing in Gildas, the earliest authority, or in the best texts of Nennius, forbids us to suppose that the *obsessio* was of Britons by Saxons.

A Temple of Adonis?

by J. W. CROWFOOT

LACHISH II: THE FOSSE TEMPLE. By Olga Tufnel, Charles H. Inge and Lankester Harding (The Wellcome-Marston Archaeological Research Expedition to the Near East). *Oxford University Press*, 1940.

THIS volume is dedicated by three of his closest friends to the memory of James Leslie Starkey, whose tragic death was so widely deplored. It records, as the editors say, only a small part of the five years' work which he directed at Tell ed Duweir, but it is an extremely interesting part of that work and the volume is a worthy tribute to his memory.

The Fosse temple was a surprising discovery. Mr Starkey came upon it unexpectedly while he was clearing a place on the west side of the hill to dump the spoil from above. In Palestine early temples are rare and the remains of them too scanty to give much reliable information. In this temple the interior disposition of the sanctuary is well preserved, small finds were abundant, and the date of the temple can be fixed within narrow limits—a happy result which we owe to its position at the foot of the hill.

The temple dates from the Late Bronze Age. Previously, during the Middle Bronze Age, the sides of the hill on which Lachish was built were protected by a steep limestone glacis with a trench cut in the rock at the bottom. Fortifications of this type have been found elsewhere in Palestine and they are generally attributed to the Hyksos. The Hyksos were expelled from Egypt about 1578 B.C. and these fortifications fell into ruin some time later. The fosse at the foot of the glacis naturally became choked with debris and remains of three temples were found, built one above the other, in these accumulations of debris. On the talus above the temples there were some graves of the Israelite period, and high above all patches of the white glacis are still in place. The date of the temples was therefore plain from their position; it fell between the collapse of the power of the Hyksos and the rise of the kingdom of Israel, and the small objects found in the different building-levels have now enabled the editors to define the

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period of each structure rather more closely ; they suggest that the earliest temple was built probably about 1475 B.C., after the expedition of Thothmes III ; the second about 1400 and the third about 1325, and that the third temple lasted until 1223 or a little longer ; the exact years are not absolutely fixed but those suggested cannot be far wrong.

The temples were all simple structures of rough uncut stones plastered with mud. The sanctuary in the earliest building was a long room 10 m. from north to south and 5 m. across, the west wall resting on the outer edge of the fosse. A shrine was built in the middle of the south wall and there were annexes against the north and west walls. When this temple was demolished the building level was raised by about 50 cms. ; the north and south walls of the sanctuary were built on the same lines as before, but it was doubled in width from 5 m. to 10.4 m. so that it became almost square. The annex on the north wall was enlarged at the same time and a new annex was built to the southeast ; the position of the shrine was unchanged. The third building stood 65 cms. above the second ; another annex was added to the southwest but the ground-plan was otherwise unaltered. The appointments in the third temple were like those in the second so far as can be seen, but much better preserved. The floor was of earth plastered in places, and the roof was carried on four wooden columns which stood on rough stone bases. In its final phase the shrine in the middle of the south wall consisted of a substantial platform, 60 cms. high, 2.25 m. deep and 2.50 m. long, partly recessed into the thickness of the back wall and partly projecting into the sanctuary. It was made of mud plastered and whitened. A mud-brick altar of incense was built against the platform and in front of it was what the editors describe as a *hearth* with a curb of plaster and clay. Three steps led up to the altar from the west, and near them was a libation stand with a cupboard full of lamps behind it. A large pottery bin stood on the east side of the platform, and a number of miscellaneous small objects were found on the platform itself. On each of the other three sides of the sanctuary stood triple rows of low benches built of mud and moulded clay about a foot (30 cms.) apart—too close together, that is, ‘ to be used comfortably for seating a congregation ’. They are described consequently by the editors as offering benches. The main doorway was from the annex to the north, which was evidently a sort of vestibule. Masses of pottery and other objects were found on the floor of the sanctuary and the adjoining rooms ; bowls in particular on and beside the benches and against various wall recesses which had served as cupboards.

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More still came from a series of pits outside the building, which had been obviously cut to receive broken and discarded objects. An excellent series of photographs and plans (plates II–XIII, LXVI–LXXI) enables one to follow the account given in the text of the disposition of the temple and the successive phases in its history.

The small finds have been published as carefully as the building, some on admirable coloured plates, others in drawings and photographs. The letterpress is concise and well informed, the tables clear and instructive, and the different strata on the site, which correspond more or less with individual pits, enable the editors to arrange the material in useful chronological sequences. The book consequently gives a good picture of Palestinian culture in the Late Bronze Age. It is not one of the most interesting periods in the history of Palestine. The pot-forms, which are mostly of local fabric, show a steady degeneration between the period of the first structure and the last. All the more attractive 'museum pieces' were either imported or made under strong foreign influence. A faience necklace in the Tell el Amarna style, the best scarabs and some other pieces in faience and glass are Egyptian works of the eighteenth or nineteenth dynasties. Most of the cylinders, which are discussed in a note by Miss Parker, show traces of Mitannian influence. One of the ivories may be Egyptian, the rest are Syro-Phoenician in style. Common Cypriot and Mycenaean types are represented in the pottery. The Duweir ewer which is reproduced as a coloured frontispiece is perhaps the most important single find. It contains some crude painting of goats, trees, a stag, a lion and a bird, and eleven letters in the Serabit script which are described by Mr T. H. Gaster. The belated survival of this script—the ewer is now assigned to the latest period of the site (about 1225 B.C.)—may be surprising, but it does not raise our opinion of the local culture.

To return to the temple. It stood outside the city walls and it was built on a singularly inconvenient site, being on the weather-side of the hill and exposed consequently to torrents of rain during the winter months. The excavations had to be suspended again and again because the trenches were flooded out, which suggests that it was used only for seasonal festivals. Architecturally, it was a simple building no more elaborate or dignified than the ordinary houses of the period. On the other hand, there can be no doubt that it was very much frequented. The second structure was twice as big as the first and it was in its turn replaced within a hundred years or so by a building in which two phases can be distinguished. The mass of small objects

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found on the site is further proof of its immense popularity—‘a total number of 2165 pots have been actually examined and classified, but this does not in any way represent the number of vessels originally present in the Temple area. It was found impossible to keep count of the number of bowl-bases from structure III, so overwhelming were they’. The small finds include a number of objects of value—gold ornaments, ivories and so forth.

The cult and dedication of the temple are briefly discussed on pp. 24, 25. ‘No image or obvious cult object was found in the Temple’ (p. 24). None of the inscribed objects throw any certain light on the name of the deity who was worshipped here. The name of the goddess Elath or Allat has been read by some scholars on the ewer, and others have found on it a reference to a divine triad, but the readings are still dubious and the fragments of the ewer were found in a rubbish deposit outside the temple. The only certain figure of a deity which was found on the site is a small bronze statuette of Reshef, but no special significance can be attached to this either because it was found in the lowest level just beyond the east wall of the first structure. Some minor parallels with later Jewish ritual which are noted in their discussion do not help much and the editors end by giving up the problem—‘In default of further evidence on the subject it can only be concluded definitely that the Temple was dedicated to native Syrian deities, among them probably Reshef and Elath, the latter possibly associated in a triad’ (p. 25).

To us, on the other hand, it seems certain that the facts do not point to one of the high gods of the Syrian pantheon, Reshef or another. This Lachish temple has none of the features which are characteristic of a temple to these high gods. There is no Holy of Holies, as the editors note; no temple court, no altar of sacrifice, and the site is far removed from the centre of the town. The temple was clearly built for the cult of a popular deity to whom the worshippers had immediate access. This being granted, the identification is surely a simple matter, because so far as we know there is only one Syrian cult which fills the role, the cult of the divine spirits of vegetation who were worshipped under so many different names—Tammuz and Ishtar in early days, Adonis and Aphrodite in the classical period. The ritual, of which we have several accounts, varied in different places, but there are some constantly recurring elements, and two at least of these are directly suggested by the two most extraordinary features at Lachish—the size of the shrine, which seems out of all proportion to the sanctuary,

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and the rows of little offering benches. The first of the two rites is the Sacred Marriage, which is best known from the fifteenth idyl of Theocritus. The capacious shrine—2.50 m. long and 2.25 m. deep—at the south end of the sanctuary looks as if it was made for such a ceremony ; it is too wide for a bier but it would have held two couches exactly—*τὴν μὲν Κύπρις ἔχει, τὴν δ' ὁ ῥοδόπαχυν Ἀδωνίς* (Idyl xv, line 128) ; (One bed Cypris keeps, and one the rosy-armed Adonis)—couches which were occupied by perishable models of the gods or by their human representatives. The small objects found on it—fragments of ivory, an oil flask, finials of fine vessels, lids of spoons, reliefs from a small casket, a faience vase, kohl tubes and alabaster dishes, cylinder seals and scarabs and stray pendants from a faience necklace—are just such as might have been used in a marriage feast or on the persons of the con-celebrants. The second rite is the offering of the so-called Gardens of Adonis, the bowls or baskets covered with a little soil and sown with seeds which are to be seen to this day in Sicily and elsewhere in spring as well as in summer. ‘ At the approach of Easter, Sicilian women sow wheat, lentils, and canary-seed in plates, which they keep in the dark and water every two days. The plants soon shoot up ; the stalks are tied together with red ribbons, and the plates containing them are placed on the sepulchres which, with the effigies of the dead Christ, are made up in Catholic and Greek churches on Good Friday, just as the gardens of Adonis were placed on the grave of the dead Adonis ’ (Frazer, *Adonis Attis Osiris*, 1906, p. 154). This rite explains the vast number of bowls which were found and the curious offering-benches to which there is no parallel so far as we know in any other temple. Other things also fall into place. The cult of the dead and risen god was a woman’s cult—it was celebrated outside the walls because it was a cult of the dead. The many lamps, the altar of incense, the absence of an altar of bloody sacrifice, all are in keeping with this interpretation. Finally, these rites were seasonal rites, celebrated in the spring in some places, in the summer in others, but always at times when the rainy months were past.

Horses and Battle-axes

by GRAHAME CLARK

THE importance of the horse in human history is matched only by the difficulties inherent in its study; there is hardly an incident in the story which is not the subject of controversy, often of a violent nature. This, as we shall see, is partly due to the way in which horses are implicated in some of the problems of prehistory which appeal most strongly to unreasoning group-prejudices. On the other hand the evidence is frequently of its very nature hard to interpret, leaving the field open to hypotheses mutually conflicting, yet each with some claim on our attention. To begin with, far too little is known about the distribution of the various wild *equidae* from which domesticated forms must have sprung. Then, skeletal material relating to the domesticated horses of antiquity is rarest precisely in some of the regions from which we should best like it, owing mainly to natural conditions unfavourable to the survival of bone. Such material as exists from archaeological sites has for the most part been poorly studied. Again, it is frequently impossible to decide whether wild or domesticated horses are in question. As Dr Ulrich Duerst long ago emphasized,¹ lengthy periods of domestication probably elapsed without osteological effects becoming apparent. 'In the horse of a primitive people', he wrote, 'the quality of tameness is wholly psychological and is therefore not perceptible in an anatomical investigation'. Thus, among dwellers on the steppe the mode of life of their horses will often remain, with brief interruptions, much the same as under wild conditions. This is well illustrated by the familiar scene on the silver vase from the Chertomlyk tumulus on the lower Dnieper, which shows a Scythic camp on the eve of battle with men 'scattered over the steppe, catching the horses which they will ride on the morrow'.² Except where, as in the example just cited, the behaviour of men reveals their relationship to horses, representations tend to be as ambiguous as bones. Harness and vehicles rarely survive in more

¹ In R. Pumpelly's *Explorations in Turkestan*, p. 385. Washington, 1904.

² M. Rostovtzeff, *Iranians and Greeks*, p. 109 and pl. xxi. Oxford, 1922. See also E. H. Minns, *Scythians and Greeks*, fig. 48. Cambridge, 1913.

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than the most fragmentary form, and, while the discovery of metal parts may tell us much, their absence need signify little, since wood, leather, wicker-work and various highly perishable binding materials are all that are needed to create a wide range of both. Representations have to be used with the greatest circumspection. Ideograms and seal-engravings are too small to reveal what may be all-important details. In interpreting larger representations due account has to be paid to technical exigencies such as the tractability of the material worked, and the possibilities of the instrument used by the artist, as well as to aesthetic conventions which may give a wholly false impression to the inexperienced eye.

For these and other reasons the theme of man and the horse in antiquity is too broad a one to be treated in the compass of a short article, or for that matter of a short book. All I propose to do here is to examine critically the view propounded by Professor Otto Rydbeck, and since accepted with greater or less reservations by many leading archaeologists, that the possession of the tame horse played an essential part in the rapid spread of the battle-axe folk of European prehistory. If in so doing I succeed in opening up some of the questions seeking solution, I shall feel that my examination has been worth while.

Rydbeck attributed the tremendous expansive power of the battle-axe folk, and the rapidity with which they moved great distances in comparatively small groups, imposing themselves on a variety of neolithic peasant societies as a warrior aristocracy, to their possession of the tame horse.³ Indeed he goes so far as to picture the demoralizing effect that their appearance on horseback must have had upon the terrified natives. Now, although curiously enough there is no evidence of association in Scandinavia itself, where it cannot yet be proved before the period of the Stone Cists (c. 1650-1450±50 B.C.), there is no reasonable doubt that the battle-axe people possessed domesticated horses.⁴ Outside Scandinavia, where it may be remarked settlement sites attributable to the battle-axe folk are extremely rare, the association

³ Published for the first time in 1930, Rydbeck's hypothesis was made more widely accessible in *Medd. från Lunds Univ. hist. mus.*, 1933-4, pp. 77-98.

⁴ The following finds are well authenticated:—

Ullstorpsån. A skull dredged from the bed of the stream which divides the parishes of Ullstorp and Qvarrestad, nr. Ystad, Scania. The flint dagger blade, which had been driven into the skull with great force at the juncture of the sutures on the forehead, was broken, but can be attributed with a margin of a century to the period of the stone cists. *Ymer*, 1901, pp. 79-91.

Note continued on page 52

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of the horse with corded ware is amply proven. In south Russia horse bones were found with those of oxen, sheep and goats at the settlement of Oussatova,⁵ claimed by Rosenberg to be close to the originating centre of the whole ceramic, as well as with corded ware under kurgans.⁶ Further north the horse can be associated with outlying sites of the Fatyanovo battle-axe culture.⁷ Especially significant are the finds at Złota, the name-site of the hybrid battle-axe culture of southwestern Poland, since the elaborate burials of horses, side by side with oxen, sheep and pig, can hardly be explained on any other basis than that the animals were domesticated.⁸ In Moravia and Bohemia the horse, noticeably absent from the Danubian peasant cultures, makes its reappearance with the spread of the corded-ware and battle-axe people at the close of neolithic times.⁹ Finally, on the western fringe of the continental distribution one may cite Holwerda's significant discovery of a horse in company with two corded beakers under a round barrow at Emst in Gelderland.¹⁰ The burial of a horse with a man surely implies a close relationship between the two. Rydbeck's assumption that the battle-axe people had tamed the horse appears well grounded.

It is when we come to closer grips with his hypothesis that doubts begin to appear. One may begin by remarking that Rydbeck's own

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Knaggegård, Luttra ksp., Västergötland. Bone from passage-grave with inventory dating from the period of the stone cists. Rydbeck, op. cit.; *Torseke, Fjälkestad ksp., Scania.* Tooth from stone cist, ibid.; *Stora Förvar, Stora Karlsö.* Horse bones from the upper level of stone cist age. J.-E. Forssander, *Die Schwedische Bootaxtkultur*, 211, Lund, 1933.

J. G. Anderson (*Ymer*, 1901, 89) has argued authoritatively against the occurrence of wild horses in Scandinavia. The only evidence to the contrary is a find from a shell-bank in Bohuslän (T. J. Ringström, *Vertebratfynd i finiglaciala skalbankar vid Uddevalla*, 13), but it is notoriously difficult to date such finds decisively. Of the numerous bog-finds the only one to be dated pollen-analytically proved to be of the Iron Age (Rydbeck, op. cit., 78-9). It would therefore appear that horse bones from early sites in Scandinavia can safely be related to domesticated forms introduced from without.

The absence of horse bones from the rich fauna of mesolithic stations in Denmark, whether bog-finds, or kitchen-middens (Clark, *The Mesolithic Age in Northern Europe*, 226-8), argues against the presence of wild forms in that country. The horse bones from the southern chamber of the passage-grave at Stenstrup, Højby ksp., Seeland, were of stone cist age and so confirm the Swedish evidence.

⁵ G. Rosenberg, *Kulturströmungen in Europa zur Steinzeit*, 1931, 15.

⁶ e.g. *E.S.A.*, II, 54 and fig. 39 ⁷ *E.S.A.*, x, 166.

⁸ *P.Z.*, 1930, XXI, 2-20 and fig. 13.

⁹ See the sites listed by Schnittger (*P.Z.*, II, 178). ¹⁰ *P.Z.*, IV, 368-73.

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pupil, J.-E. Forssander, while seizing upon a facile explanation for the spread of the battle-axe people, was careful to avoid subscribing to the view that they actually rode the horse.¹¹ Again, Professor Childe, in commending to readers of *ANTIQUITY* (1934, 122) Rydbeck's 'suggestion that the rapid spread of the battle-axe cultures is due to the fact that their authors possessed a hitherto unknown means of transport—the tame horse', is careful not to be more specific, while Hawkes goes out of his way to deny in his recent book¹² that the battle-axe people were horse-riders.

While it is naturally impossible to adduce material evidence against the view that they rode the horse, it is of course quite open to Rydbeck to remark that equally there need be no surprise that direct evidence in favour of his theory is not forthcoming. In the absence of representational art it is hard to see how there could be, since spurs and stirrups both came late in the history of equitation. Prick-spurs date back to the Early La Tène period,¹³ but stirrups are substantially later. Their introduction was due almost certainly to the horse-riding people known to the Chinese as Hsiung-nu and to ourselves as Huns. Terracotta grave-figures¹⁴ show that the device was introduced to China during the period of Tartar domination (Wei dynasties, A.D. 386–557). The earliest stirrups known from the West come from Sarmatian tombs in the Kuban district, tombs which range in date from the 1st century B.C. to the 4th A.D.¹⁵ It is likely that they were introduced to the Sarmatians by the Huns in the 4th century, in which case it will be seen that the device reached China and the West about the same date. A point to notice is that early stirrups from either end of Eurasia agree in shape, having a flat foot-rest, reinforced on the under side by a raised rib.¹⁶

¹¹ op. cit. 210–3.

¹² *The Prehistoric Foundations of Europe*, 237. London, 1940.

¹³ e.g. That from the La Tène I burial at Trugny, Aisne, referred to by Déchelette (*Manuel*, III, 1202). By La Tène III times there was already a variety of forms, some attached by knobs, some by buckles, e.g. the Stradonitz find (*ibid.* 1203). An interesting point noted by Déchelette is the frequency with which single spurs are found with early burials. Riders commonly made do with a single spur as late as Merovingian times.

¹⁴ e.g. A figure of a mounted woman bequeathed to the University Museum of Archaeology and Ethnology at Cambridge by Professor Sir William Ridgeway.

¹⁵ Rostovtzeff, op. cit. 130.

¹⁶ This can be seen very instructively in the University Museum of Archaeology and Ethnology, Cambridge, where an iron stirrup left behind by the Huns in Hungary is exhibited side by side with gilt tomb models and bronze originals of T'ang date.

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As Ridgeway long ago pointed out,¹⁷ there is archaeological and philological evidence to suggest that the first stage in the origin of the stirrup 'was the attachment of a rope or a strap of leather to the riding-pad to assist the rider to mount'. That such was used by the Scythians is shown by the thong which hangs from one of the horses on the Chertomlyk vase. It is further implied by the derivation of the English 'stirrup' and the French 'étrier', viz. stirrup, a contracted form of O.E. *stige-rap* (*stigan*=to mount and *rap*=rope), and *étrier* from the old High German *estrifa*, a strap of leather. In the earliest stirrups a metal strip was introduced to strengthen the leather strap. When the whole stirrup was fashioned in metal the raised rib on the underside survived as a reminder.

If we must admit that the strictly archaeological evidence gives Rydbeck some loophole, yet the *à priori* argument against his thesis is overwhelmingly strong, for riding has nowhere been shown to precede the driving of horses in antiquity. Although the evidence is still defective it is possible to observe with some clarity the process of transition from driving to riding in various parts of the ancient world. Thus in China chariots had played a leading part in war for a thousand years before being superseded by cavalry in the 2nd and 3rd centuries B.C.¹⁸ In the Near East riding, although of greater antiquity than in China, was equally certainly preceded by driving. The change-over seems to have coincided broadly speaking with the close of the second millennium B.C. Thus, while a Hittite text of the 14th century may speak of a king mounting a horse, or even of messengers on horseback, it is not until the 9th century that cavalry came into general use in Assyria, Syria and neighbouring regions.¹⁹ A point to notice is that, although the light chariot was everywhere displaced as cavalry came in,

¹⁷ *The Origin and Influence of the Thoroughbred Horse*. Cambridge, 1905, 498-9.

¹⁸ That the use of chariots in China goes back to the Shang dynasty is proved by chariot burials and quantities of gear from Anyang, as well as by inscriptions on oracle bones from the same site recording war chariots in the reign of Wu Ting (1324-1266 B.C.). Under the Chou dynasty (traditional dates 1122-256 B.C.) the importance of states was reckoned in terms of the number of chariots they could muster—we read of 'a state of a hundred (or a thousand) chariots', just as in medieval Europe power was calculated in terms of mounted knights. H. G. Creel gives much information in *The Birth of China*, London, 1936, especially pp. 149 ff. According to Joseph Wiesner (*Fahren und Reiten in Alteuropa und im alten Orient*. Leipzig, 1939, pp. 89-90), the Emperor Wu Ling (325-299 B.C.) led mounted archers, but cavalry did not take the place of chariots for nearly 200 years.

¹⁹ F. W. Albright in *Archiv. für Orientforschung*, 1930-1, VI, 216-21.

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the heavier vehicle used by the Hittites and Assyrians to carry a shield-bearer as well as driver and warrior was retained in use. In Europe the same sequence applies : indeed, so retarded was the transition west of the Rhine that we are able to see it reflected clearly in the experience of the Romans. For instance, whereas in 292 B.C. the Gauls and Samnites mitigated their defeat at Sentinum by routing the Roman cavalry with a thousand chariots, by Caesar's day the Gauls and even the Belgae had changed over to cavalry. Only in Britain did the Celtic peoples continue to use chariots in war up till the time of the Claudian conquest.

Rightly or wrongly Ridgeway was inclined to attribute the priority of chariot driving over riding to the small size of early domesticated horses, which while capable of drawing a light war vehicle were not of sufficient weight to make effective chargers. However this may be, it seems certain, as he himself allowed, that conservatism in the use of weapons played an important part. Whereas fighting on horseback involved quite a new technique, this was by no means so in the case of chariots. Among people wedded to the bow the chariot merely provided a mobile platform for the archer, while among spearmen like those of our own Early Iron Age it was used solely to strike terror into the enemy and convey the warrior into the thick of the fray in which he engaged on foot. Technological was reinforced by social conservatism no less weighty. Among chariot-using peoples the chariot warrior enjoyed a social position comparable with that of knights among horse-riding communities.²⁰ This, added to the fact that between chariots and cavalry there was no clear-cut advantage, helps to explain why the use of chariots in warfare, once established, tended to persist, and why, on the other hand, once the change was made with all its technological and social readjustments it was sweeping.

Whatever the explanation the essential fact of the priority of the chariot stands out clearly in contradiction to Rydbeck's thesis. If, then, we can no longer attribute the martial successes of the battle-axe people to their cavalry, is there any evidence that they were charioteers ?

²⁰ Albright, *op. cit.* 220. The high esteem in which chariots were held is also reflected in correspondence between princes, as for instance in the letters from Tush-ratta, king of Mitanni, to Amenhotep III of Egypt, found at Tell El-Amarna. A characteristic formula of greeting runs ' may it be well with thee, with thy government, with my sister and thy other wives, with thy children, with thy nobles, with thy chariots and horses, with thy land and with everything which is thine. . . . ' *The Tell El-Amarna Tablets in the British Museum*, p. xxxvii. London, 1892.

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That they were is the strident contention of the school of pan-Germanists whose doctrines flow from the somewhat lurid teaching of Gustaf Kossinna.²¹ Aryan by speech and Nordic by blood we are asked to envisage waves of the *Herrenvolk* borne along in their war-chariots by the noblest of domesticated beasts to their destiny of domination. In silence the proud peoples of the Aegean, of Hither Asia, and of Egypt bowed their heads to the aristocrats from the North. From afar could be heard the jangle of the harness of the horses of the heroes. Of hard northern rock the battle-axes swung from the girdles of the flaxen-haired. . . .

It must be admitted that the appearance of light war-chariots drawn by horses and fitted with spoked wheels for speed came relatively late in the history of the old culture-lands, and it was certainly sudden. Indeed, it is the rapidity of its spread in the 16th century B.C. that makes it so difficult to decide upon the centre of origin and lines of movement. The coming of the war-chariot to Egypt marked an abrupt break, since that country had failed to share in the previous two thousand years of development of wheeled vehicles known by Mesopotamia. There is, however, no shadow of evidence for the traditional view²² that the war-chariot was introduced by the Hyksos when they conquered the Delta. For one thing, as we are reminded by Wiesner,²³ there is no trace either of horse bones or of horse harness in the Hyksos graves of Egypt, while Petrie's attribution of the Gaza horse-burials to the Hyksos has been dismissed as arbitrary.²⁴ Much more likely is it that, as Ridgeway suggested,²⁵ the acquisition of war-chariots enabled the Egyptians to evict their unwelcome guests. Certain it is that the first mention of war-chariots in Egypt dates from the reign of Ahmose

²¹ Born in 1858 Kossinna first enunciated his gospel in 1895 in his famous harangue at Cassel. A notable Nordic type himself, he devoted his time as Professor of Prehistory at Berlin (1902-31) to reiterating his central theme. He founded the periodical *Mannus* in 1908 and in it gave currency to the views of himself and his pupils. He was undoubtedly capable of engendering intense enthusiasm and before he died he had become a national figure. That his aggressive Pan-Germanism was rooted in a sense of inferiority is nowhere more clearly shown than in his article 'Höhepunkte nordindogermanischer Kultur', *Mannus Z.* 1919-20, 11-12, 249-75, written at a time of national defeat. In this revealing effort he seeks to restore his countrymen's faith by 'recalling' their legendary prowess in remote antiquity.

²² e.g. G. Contenau, *La Civilisation des Hittites et des Mitanniens*, 1934, pp. 122 ff.

²³ op. cit. 33 n. 3.

²⁴ e.g. by von Bissing, *Archiv. für Orientforsch.*, 1936-7, II, 325 ff.

²⁵ op. cit. 216-9.

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(1580-1557), although the earliest representation yet observed dates from a generation or two later.²⁶ The type of chariot we meet in Hither Asia and Egypt in the 16th century B.C. consisted of a very lightly constructed carriage set midway over the axle on which revolved two wheels each with four spokes. Precisely the same form was already in use among the Mycenaeans at the period of the Shaft Graves (c. 1580 B.C.), as shown not only by the well-known stelae,²⁷ of which it might be argued that the date is not entirely beyond question, but also by the gold ring²⁸ with deer-hunting scene from grave IV and the silver vessel²⁹ from the same grave. The similarity in form between chariots over a wide area and the abruptness of their appearance have led many to conclude that their spread must everywhere be attributed to a specific people, an assumption which is probably true only to a limited degree. A point in favour of such a hypothesis is that war-chariots are more than a technical device. They are the outward and visible symbols of a warrior outlook foreign to much of the earlier history of Egypt, the Near East and the Greek Mainland.

Now it is one of the main planks in the Germanist platform that the appearance of a warrior outlook outside northern Europe can only be explained in terms of ethnic movement from that area, the self-appointed hearth and home of heroes. It is thus with a note of triumph that Kossinna and, in greater detail, Jorg Lechler,³⁰ one of his most devoted acolytes, point to the earliest representations of chariots in the north. Although too schematic to reveal much detail, one of the engraved slabs of the famous tomb at Kivik³¹ in Scania shows quite clearly a chariot with two four-spoked wheels drawn by a pair of yoked horses. More informative in some respects are certain engravings found on exposed rock-surfaces in southern Sweden, in which it can be seen that the body of the chariot was set midway over the axle (FIG. 1)³². There is no doubt that here in the north we have evidence of chariots

²⁶ viz. on the grave of User (Thebes no. 21), dating from the reign of Thutmose I (1545-14).

²⁷ Of the eight representations on the stelae at Mycenae the best known has been reproduced in *ANTIQUITY* (1936, pl. opp. p. 408).

²⁸ G. Karo, *Die Schachtgräber von Mykenai*, no. 240 and pl. xxiv. Munich, 1930.

²⁹ W. von Reichel, *Homerische Waffen*, 2nd edition, p. 13, fig. 17c.

³⁰ 'Neues über Pferd und Wagen in der Steinzeit und Bronzezeit', *Mannus Z.*, 1933, xxv, 123-36.

³¹ For a good photograph see G. Schwantes, *Geschichte Schleswig-Holsteins*, abb. 837.

³² *P.Z.*, 1912, IV, 201 ff.

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of the type which first came into use in the Near East. On the other hand it is only by the most arbitrary chronology that Lechler, following his master, is able to advance these representations as proof of the priority of their originals. Even if it was agreed that the open engravings can safely be assigned to the beginning of the Bronze Age—in fact they went on being made for hundreds of years—this would not, on the basis of modern chronology, make them sufficiently ancient. Kivik, which can be closely dated, has recently been assigned to the period 1000–800 B.C. by no less an authority than Dr Brøndsted.³³ If we can accept the Trundholm sun-car with its four-spoked wheels as evidence that chariots were in contemporary use, it would be possible to allow that such were introduced to the north as early as the period 1300–1000 B.C. There is no shred of evidence for a higher antiquity. It seems likely that the light war-chariot reached the north from Greece by way of the amber route. At least it is certain that, far from standing at the originative centre, the northern chariots as a group are late and peripheral. This is confirmed by the absence from northern Europe of the improved type of vehicle perfected in Hither Asia, in which the axle was attached to the rear of the carriage, so giving the archer a more stable platform and easing the strain on the horses, a development accompanied by an increase in the number of spokes from four to six. The appearance of the new type in Egypt is marked by representations in the tomb of Tutankamen, illustrating the triumph of a predecessor (Amenhotep III, 1411–1380) over negroes and Syrians.³⁴ Present indications are that the improved war-chariot had spread to Egypt before the primary form had reached the Baltic.

Lechler and others have made great play with the 18th dynasty chariot from Thebes,³⁵ now at Florence, a fine example of the early four-spoked type. 'Entirely composed of wood joined with pegs or studs of bone, not a single scrap of metal of any kind . . . being used in its construction', the vehicle is a standing warning of the danger of arguing *ex silentio*. Defective harnessing put a premium on lightness of construction, but skilful choice of materials—oak for pole, axle and spokes, ash for felloes, and hornbeam for yoke—made a strong job. The point seized upon by Lechler³⁶ is that birch bast was used to bind

³³ *Danmarks Oldtid*, II. København, 1939, 105 ff.

³⁴ W. Wreszinski, 'Lowenjägd im Alten Aegypten', *Morgenland*, hft. 23. Leipzig, 1932, abb. 33.

³⁵ Ridgeway, *op. cit.* fig. 69.

³⁶ *op. cit.* 123.

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the spokes to nave and felloes ; but birch trees happen to grow in southern Armenia in the land of the chariot-driving Mitanni,³⁷ as well as round the shores of the Baltic. Since the Amarna letters specify 'ten wooden chariots, with all their fittings complete'³⁸ among the gifts sent by a Mitannian king to a pharaoh of the late 15th century, it seems more reasonable to explain the Florence chariot as a royal present from Mitanni than as the relic of a warrior incursion from the far North.

As one of the few items of horse harness to survive, the bit has inevitably come to play an important part in any discussion on the utilization of horses in antiquity. But its significance derives from far more than its mere survival ; the introduction of the bit greatly enhanced the driver's control over his steeds, a consideration which in the case of

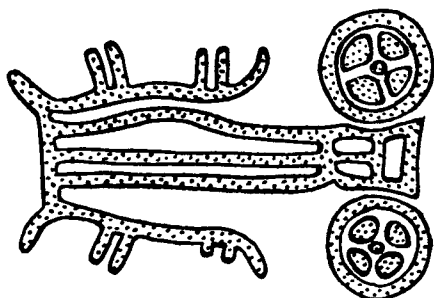


FIG. 1. REPRESENTATION OF HORSE-DRAWN CHARIOT ON
SWEDISH ROCK-ENGRAVING

After Almgren

war-chariots with their requirement of rapid manoeuvre was of paramount importance. Indeed, it seems likely that the innovation in horse harness betokened by the bit must be closely related to the widespread use of the war-chariot itself. Conversely it is a good working assumption that early bits betoken war-chariots. For work-a-day wheeled vehicles the halter or head-stall, made of some perishable material such as would leave no archaeological trace, must have been the rule. An early model of a horse's head from Kültepe in Asia Minor³⁹ reveals a head-stall made from what appears to be leather straps. Much more primitive materials must often have been used. Ridgeway mentioned straw halters as still being in use in parts of Ireland ;⁴⁰ rushes and cord

³⁷ Wiesner, *op. cit.* 34.

³⁸ *The Tell El-Amarna Tablets*, XL.

³⁹ E. Meyer, *Reich und Kultur der Chetiter*, fig. 45, 1914.

⁴⁰ *op. cit.* 240.

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are other obvious substances. Indeed, bits were not a *sine quâ non* even for war-chariots. The normal type of harness represented on the funerary monuments of the Late Kingdom which depict chariot scenes consisted of leather nose- and head-bands, secured at their junction by a metal stud. It must be remembered that the whip, commonly illustrated in early representations,⁴¹ was capable of playing a part in guiding chariot horses.

Although, therefore, nothing conclusive can be argued from the absence of bits, their presence is crucial, as the Germanists have been quick to realize. Every effort has been made, not only to establish the antiquity of the bit in northern and central Europe, but also to proclaim it as one more invention symbolic of the warrior-superiority of the Nordic stock. The assiduity, and on occasion, the effrontery with which this object has been pursued, have combined to secure much wider assent than the evidence justifies. The baselessness of such pretensions has been well exposed by Gertrud Hermes⁴² to whose papers the reader may refer for a very full statement of the relevant facts. Although perhaps pressing some of her points a little far, she effectively disposes of the case for bits in Neolithic and Early Bronze Age Europe. With the possible exception of a single antler cheek-piece from level B in the Hungarian tell of Tószeg (c. 1600-1400 B.C.),⁴³ the earliest specimens are those from the so-called 'Terremare' of the Italian Middle Bronze Age.⁴⁴ As far as the battle-axe people are concerned the horse-bit is no longer in question.

An exhaustive discussion of origins lies outside the scope of the present paper, but it is perhaps worth pointing out that, notwithstanding some recent confident assurances to the contrary, the thesis of the European origin of the bit is not by any means securely founded. The 'classical' genealogy of the horse-bit was devised by Forrer,⁴⁵ whose scheme may be simplified as follows :—

⁴¹ e.g. Wreszinski, *op. cit.*, figs. 39 and 60.

⁴² 'Das gezähmte Pferd im neolithischen und frühbronzezeitlichen Europa', *Anthropos*, 1935, xxx, 803-23 and xxxi, 115-29; 'Das gezähmte Pferd im alten Orient', *ibid.* 364-94.

⁴³ Childe in *The Danube in Prehistory*, 263. Oxford, 1929. But cf. Tompa (24-5 *Ber. Röm.-Germ. Komm.*, 1924-5), who merely illustrates examples from Füzesabony, dating from Tószeg D (pl. 42, 1 and 2). One may hope for further information when the definitive account of Tószeg at length appears.

⁴⁴ T. E. Peet, *The Stone and Bronze Ages in Italy and Sicily*, 353. Oxford, 1909.

⁴⁵ R. Forrer and R. Zschille, *Die Pferdetrense in ihrer Form-Entwicklung*. Berlin, 1893.

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I, Neolithic	Mouthpiece of wood or bone, articulating directly with harness.
II, Transition to Bronze Age.	Rigid bit with transverse bone mouthpiece set into the rectangular sockets of antler cheek-pieces. (FIG. 2, a).
III, Early Bronze Age.	Rigid bit with twisted metal mouthpiece set into the rectangular sockets of metal cheek-pieces. (FIG. 3, a).
IV, Early Bronze Age.	Metal bit with mouthpiece broken into two linked members, each set firmly into its respective cheek-piece. (FIG. 3, b, c).
V, Hallstatt.	The same, but with the mouthpieces rotating freely in circular sockets. (FIG. 3, d).

Stage I in Forrer's system may be dismissed as hypothetical, while the attribution of stages II-IV can no longer be sustained.⁴⁶ Otherwise there is nothing improbable in the sequence as applied to northern and central Europe, the Caucasus and even Assyria, where indeed metal bits show clear traces of their horn or antler prototype in the curvature of their cheek-pieces.⁴⁷ It is true, as Hermes has insisted,⁴⁸ that horn bits must have served as cheap substitutes for metal ones, but this need not alter the fact that they may also have been the prototype of a widely spread family of metal bits.

The problem of origins is, however, complicated by the existence of bits in Egypt, Palestine and Greece, which show no trace of having descended from any such prototype and yet can lay claim to a respectable antiquity (FIG. 4). Two stages can be recognized, an earlier in which the mouth-piece consists of a single bar, and a later one in which it is formed of two members linked together. A feature which distinguishes them both from the typologically early bits of Europe (Forrer's II-IV) is that all the cheek-pieces revolve freely. Moreover, in no case do the cheek-pieces show traces of the tell-tale curvature. In the early group

⁴⁶ e.g. the type examples for stages II and III came from a pile-dwelling (Corcelettes) now assigned to the Late Bronze Age.

⁴⁷ Sophus Muller in his 'Charrue, joug et mors' (*Mém. de la Soc. Roy. des Antiq. du Nord*, 1902-7, 55-9, was one of the first to emphasize the resemblance, though he spoilt it by trying to derive the northern bits from Assyrian ones of the 8th century B.C. Pieces of horn cut from near the tip form the basis of the cheek-pieces of a Frankish bit from Wülflingen, illustrated by Forrer (op. cit., pl. VIII, 9). Professor V. G. Childe has kindly referred me to a bronze bit from a Hallstatt burial at Langenfeld in the Prähistorische Stratsammlung at Munich (Naue coll. no. 95. 185. 2), the cheek-pieces of which reproduce the horn form very convincingly.

⁴⁸ *Anthropos*, xxx, 823.

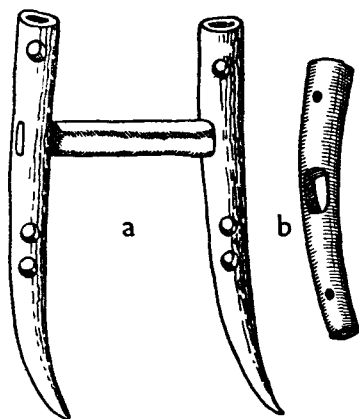


FIG. 2. (a) RIGID BIT WITH ANTLER CHEEK-PIECES AND BONE MOUTH-PIECE FROM CORCELETES. (b) *After Forrer*
(b) ANTLER CHEEK-PIECE FROM MÖRINGEN. (b) *After Forrer*

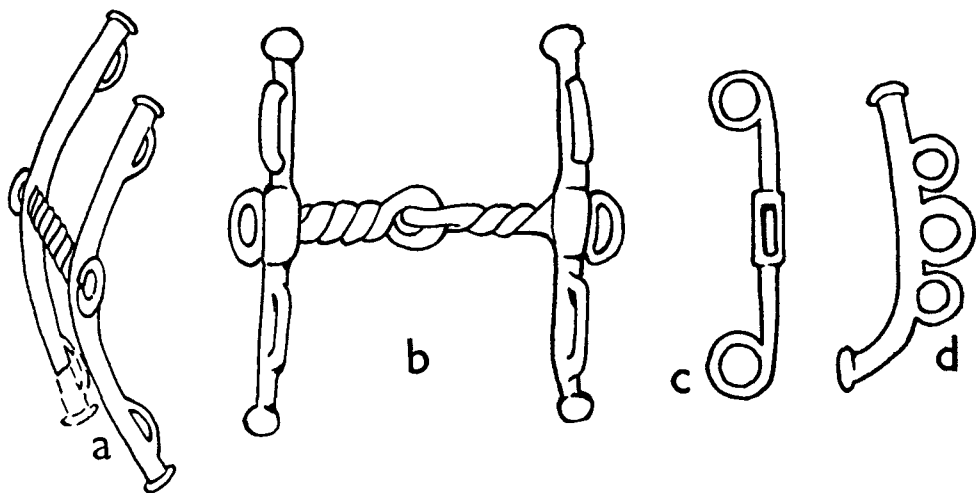


FIG. 3. METAL BITS AND CHEEK-PIECES FROM CORCELETES (a), MÖRINGEN (b, c) AND KOBAN (d). (c. 21/52). *After Forrer*

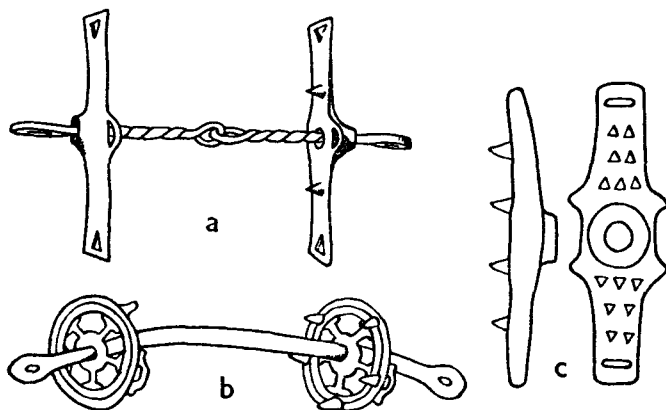


FIG. 4. BRONZE BITS FROM MYCENAE (a) AND GAZA (b, c)
After Reichel and Petrie

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they consist either of wheel-like spoked discs⁴⁹ or of oblong plates⁵⁰ (FIG. 4, b and c); in the later of straight pieces, flat⁵¹ or rounded,^{51A} the former having in both cases triangular holes near either end for engaging the bridle straps (FIG. 4, a). In every example from the earlier group, and in one from the later (Mycenae), the inner face of the cheek-piece is provided with spikes, a feature never found in the European series. Of the later group three are of Late Mycenaean Age, but one is of Amarna Age. The earlier group has not been found on sites of later date than the Amarna Age and may go back considerably earlier.^{51B} Although there is much to be learnt about the early history of horse-bits it must be obvious that the European origin of the device is more than doubtful. Certainly it can hardly be used to bolster the case for the northern origin of the war-chariot.

If we are to deny steeds or war-chariots to the battle-axe heroes, can we allow them waggons for their horses? The *à priori* evidence argues strongly against. It can be taken for granted that oxen rather than horses were used for heavy draught in early times. The reason is to be found in the mode of harnessing in vogue, which though moderately well adapted to the physique of the ox was hopelessly inefficient for horses. As Lefèvre des Noëttes has shown,⁵² previously to the introduction of the rigid shoulder-collar in the Early Middle Ages, the main weight of a horse's load was borne by a collar of supple leather attached to the yoke, and encircling the throat in such a way as to press most heavily where the wind-pipe comes closest to the skin. It is no wonder that the loads prescribed for horses by the Theodosian Code were comparatively trifling. Under these circumstances it is not surprising to find that the ox enjoyed a monopoly of work which required heavy pulling, such as drawing the plough or the waggon. If historically the ox was the earliest draught animal in Europe, it still retains its position in certain parts of the continent against the competition of horse and petrol engine. It is true that the smallness of cultivation

⁴⁹ Amarna (Wiesner, op. cit., pl. II, 3); Gaza (Petrie, *Ancient Gaza*, III, pl. xxv, 221 and IV, pl. xxxv, 558).

⁵⁰ Gaza (ibid., IV, pl. xxxv, 555).

⁵¹ Gezer (R. A. S. Macalister, *The Excavations at Gezer*, II, fig. 214); Mycenae (Reichel, op. cit., 142, fig. 90).

^{51A} Miletus (Wiesner, op. cit., pl. II, 4); Amarna (ibid., pl. II, 5).

^{51B} Hermes, indeed, follows Petrie in ascribing the Gaza finds to the Hyksos, relegating them to c. 1700 B.C. (*Anthropos*, xxxi, 381); but *vide supra* 56.

⁵² e.g. *L'Anthropologie*, 1926, xxxvi, 297-308.

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plots in Neolithic and Early Bronze Age times, and the absence of manuring, rendered waggons of less importance in the daily round of agriculture than they have subsequently become. On the other hand the extensive character of early agriculture, involving the frequent breaking up of new ground, meant that farming communities must constantly have been on the move, and in this the waggon must have played an important role. As we are reminded by the Ulski model, the epic of the Covered Waggon has a respectable antiquity—only we must substitute oxen for the horses of the film.

Evidence for draught oxen in prehistoric Europe is comparatively rare, because, performing a humdrum task, the ox failed to attract the limelight. Even its harness was simple, made from perishable materials. For plough-scenes we can of course refer to the familiar rock-engravings of Bohuslän and the Alpes Maritimes, and probably to the pair of yoked oxen modelled in copper from Bythin, Posen,⁵³ though in the last instance we cannot of course be quite sure what the oxen were drawing. As for ox-waggons the most definite evidence is that of the Swedish rock-engravings, in which four-wheeled vehicles were invariably ox-drawn (FIG. 6, b). With reference to what I have said about harnessing it is worth noting that the only evidence for horse-drawn waggons from prehistoric Europe relates to cult vehicles of the Early Iron Age, which it may be surmised carried but slight burdens and were drawn in procession at a leisurely rate. Concrete examples are the noble brass-plated waggon from the Dejbjerg Bog, near Ringkøbing, Jutland,⁵⁴ and a similar one from Ohnenheim, Alsace,⁵⁵ but schematic representations occur fairly commonly incised on pottery vessels dating from the Early Iron Age. Those from east Prussia published by La Baume⁵⁶ depict processions, with the waggon, sometimes preceded by horses, driven by an erect figure or led by a groom on foot. The scene on the well-known sherd from Oedenburg, Hungary, shows a waggon drawing what may well be a situla in procession (FIG. 5). Perhaps we have here a glimpse of a rain-making ceremony similar to that indulged in by the people of Krannon, Thessaly, in ancient times.⁵⁷ In periods of drought they would set an amphora on a Holy Waggon

⁵³ O. Montelius, *Ältere Bronzezeit*, abb. 3 ; Ebert, x, taf. 70a.

⁵⁴ Schetelig and Falk, *Scandinavian Archaeology*, 188, fig. 10.

⁵⁵ R. Forrer, *Char de Culte à quatre Roues et Trône*. Strassburg, 1921.

⁵⁶ 'Bildliche darstellungen auf ostgermanischen tongefässen der frühen Eisenzeit', *IPEK*, 1928, 25-48.

⁵⁷ A. Furtwängler, *Meisterwerken der griechischen Plastik*, 259-61.

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' of brass ' (bronze-mounted ?) and, filling it with water, would draw it about in the hope that the liquid splashing over on to the ground would induce rainfall. That a similar practice obtained in France and neighbouring parts of the continent is also suggested by actual remains of such waggons, usually in the form of four-spoked wheels with wooden tyres, sometimes accompanied by a situla.⁵⁸

It has been claimed by Lechler that among certain engravings on the inner face of a megalithic slab forming part of the long cist with

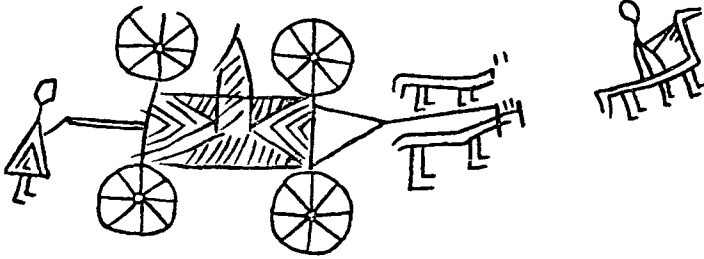


FIG. 5. REPRESENTATION OF HORSE-DRAWN WAGGON IN PROCESSION ON A
SHERD FROM OEDENBURG, HUNGARY. (c. 4). After Déchelette

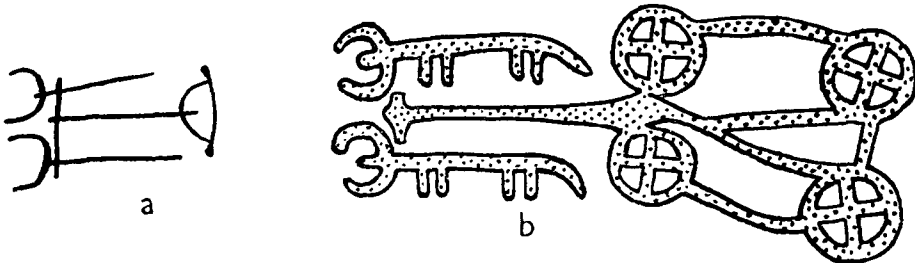


FIG. 6. (a) REPRESENTATION OF OX-CART (?) ON INNER FACE OF MEGALITHIC
LONG CIST AT ZÜSCHEN, HESSE. After Lechler
(b) REPRESENTATION OF OX-DRAWN WAGGON ON SWEDISH ROCK-ENGRAVING
After Montelius

portholed cross-slab at Züschen, near Fritzlar, Hesse, there is represented a two-wheeled ox-cart of the type known from early times in Mesopotamia.⁵⁹ Comparison of his drawing (FIG. 6, a) with the engraving published by Wahle⁶⁰ does not, however, inspire confidence. Until adequate photographs have been published it would be wise to

⁵⁸ ' Der Bronzeräderfund von Stade ', *P.Z.*, 1927, XVIII, 154-86.

⁵⁹ *op. cit.*, abb. 19b.

⁶⁰ *Deutsche Vorzeit*, abb. 15.

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leave this find in suspense. The representations do, however, certainly depict yoked oxen with their horns exaggerated in characteristic fashion.

It is likely that the two wooden wheels from the Early Bronze Age lake-dwelling of Mercurago, near Ancona,⁶¹ belonged to ox-drawn vehicles (FIG. 7). Like the much more ancient ones from Sumer each of the Mercurago wheels consist of three pieces.^{61A} They differ only in so far as they have been shaped to save weight. In the more primitive of the two, apertures have been formed by removing lunate portions from the two side-members and shaping the middle one, the wheel being held together by cross-ties set in shallow grooves.⁶² The other is basically similar, though in this case the process of lightening the

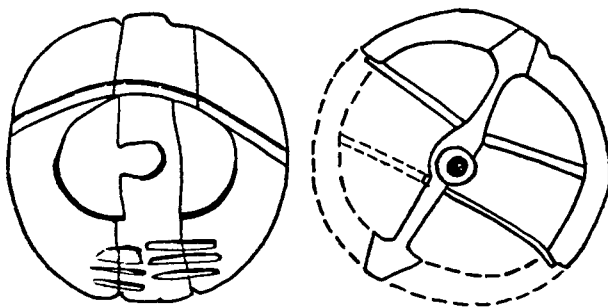


FIG. 7. WOODEN WHEELS FROM MERCURAGO. (c. 2/33)
After Déchelette

wheel has been carried a stage further: the side-members have been reduced to mere felloes and the middle one has been more drastically shaped. Again the three parts are held together by cross-ties, aided by dowelling, but here they consist of free-standing struts, which have, however, only the most superficial resemblance to radial spokes. Solid disc-wheels with small lunate openings on either side of the axle-hub have been recovered from Jutish bogs, a complete one from Tindbæk Mose, Viborg, and another, fragmentary, from Dystrup, Randers;

⁶¹ Déchelette, *Manuel*, II, 289-90.

^{61A} Similar wheels are still found on ox-waggons in different parts of Europe, e.g. *J.R.A.I.*, 1881, 80, fig. 12; *ANTIQUITY*, 1929, pl. II, opp. p. 341.

⁶² No adequate drawings of the wheel have been published, but Déchelette's photograph suggests that the system of tie-pieces, set in grooves, was more complex than existing line illustrations suggest (e.g. F. Keller, *The Lake Dwellings of Switzerland and other parts of Europe*, 1866, pl. VIII, 20).

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unfortunately neither of these wheels, almost certainly from ox-carts, can be dated.^{62A}

Some light is thrown on the use of oxen for haulage by the wooden yokes sometimes found in bogs and lake-sites, though these have to be treated with circumspection. It is not always easy to decide whether a given specimen was used by horses or oxen, or whether in the latter case for plough or waggon. If the attribution of the double yoke from Petersfehn, Oldenburg,⁶³ to the Neolithic period (on the basis of pollen-analysis) is accepted, one cannot doubt that it was used for oxen, though its rather crude character makes closer diagnosis impossible. A more delicately wrought example described as from a 'Neolithic' pile-dwelling on the Bielersee in Baden⁶⁴ has a better claim to be considered

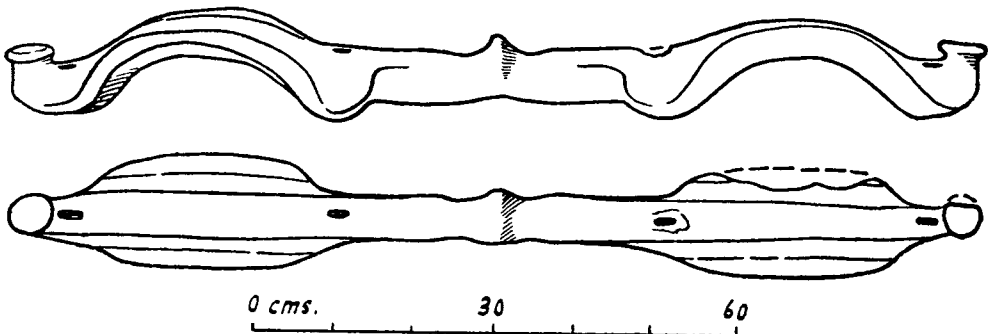


FIG. 8. WOODEN YOKE FROM LA TÈNE
After Vouga

as a piece of waggon harness. Of the two yokes from La Tène, the elaborate nature of which indicates that they were used for vehicles, Vouga considered it likely that the larger was used for oxen (FIG. 8), the smaller for horses (of the small Celtic variety).⁶⁵ It is worth remarking that the treatment of both suggests a metal prototype, bringing to mind an Etruscan bronze yoke at Florence.⁶⁶ The series of delicately made yokes from various bogs in Jutland, described by Sophus Muller⁶⁷ and most likely dating from the Early Iron Age,

^{62A} Brøndsted, *op. cit.*, I, 149, fig. 93.

⁶³ E. Sprockhoff, *Die Nordische Megalithkultur*, 136, fig. 91.

⁶⁴ Ebert, x, taf. 70.

⁶⁵ P. Vouga, *La Tène*, 96. Leipzig, 1923.

⁶⁶ Reichel, *op. cit.*, fig. 70.

⁶⁷ *op. cit.* 41-53.

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may have been used either for ox-waggons or perhaps for horse-chariots or ritual waggons of the type to which allusion has been made above.

It is of course possible that the battle-axe people maintained their horses purely as a source of food, for their meat and mares' milk. On the other hand it is possible that they had taken a first step towards utilizing the motive power of their horses by using them as pack animals. It is significant that in Egypt, to which wheeled transport came late, pack animals were greatly used; the ass is constantly represented as the beast of burden.⁶⁸ In Crete the mountainous nature of the country hindered the widespread use of wheeled vehicles and here also we find evidence of the use of the ass as a pack-animal.⁶⁹ It seems only reasonable to expect that the horse must have served the same purpose in north-western and central Europe where the absence of roads was aggravated by climatic conditions: indeed, we know from the recent history of our own country that before the construction of metalled roads pack-horses⁷⁰ played a far more considerable part than wheeled transport, and that up till the time of railways their role was an important one. Unfortunately like so many of the more significant activities of economic life the use of pack-horses has left only the slightest traces in the archaeological evidence. The only example of a wooden pack-saddle that comes to mind from prehistoric Europe is that from La Tène (FIG. 9):⁷¹ one may imagine basket panniers or other containers hanging from the hooks which project from the framework.

The conclusion to which I am driven by a process of elimination is that, in so far as the battle-axe people used their horses for transport at all, they employed them as pack-horses. I shall round off this essay by suggesting that such a hypothesis accords very well with what is known of the introduction of the horse to Asia Minor, an event which there is reason to believe was accompanied by the spread of battle-axes.

⁶⁸ For an amusing picture of a laden ass in ancient Egypt, see G. Hatt, *Landbrug i Danmarks Oldtid*, 1937, fig. 37.

⁶⁹ For a clay model (LM) of an ass carrying water-jars, see *The Palace of Minos*, II, fig. 79. Traces of a pack may be seen on the ass in the Early Bronze Age plough-scene from Cyprus published by Dikaios in *Man*, 1933, no. 134; also *Archaeologia*, LXXXVIII, pl. IX.

⁷⁰ See, e.g. Dr G. B. Grundy, *Arch. J.*, LXXIV, 83 ff.

⁷¹ I base my illustration (fig. 9) on Vouga's suggested reconstruction rather than on that exhibited by the National Museum of Antiquities, rightly condemned by him, although illustrated in his book (op. cit. fig. 10).

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That battle-axes reached western Anatolia⁷² at an early date is proved by their occurrence at Troy II (2500–2300 B.C.), Thermi and Yortan. Further east they seem to have arrived rather later. At Alişar they do not appear until stratum II, dated by Cappadocian tablets to round about the 20th century B.C. Parallel with this easterly drift was the southward incursion into Greece recently emphasized by Fuchs.⁷³ The fact that battle-axes appear to have broken into established cultures without influencing their pottery⁷⁴ could be explained

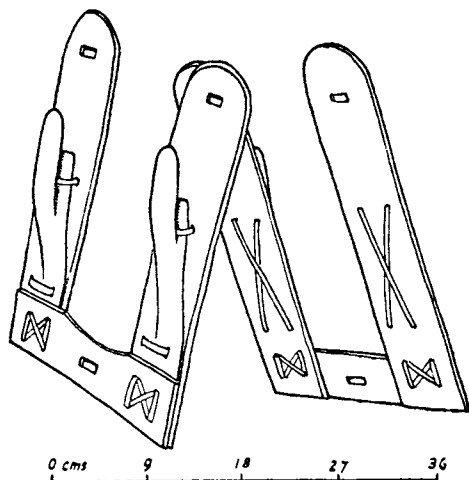


FIG. 9. WOODEN PACK-SADDLE FRAME FROM LA TÈNE

by the spread of a warrior class, small in numbers but potent in influence. It may well be that the newcomers introduced the horse, bones of which were recovered from Troy II,⁷⁵ and perhaps, also, the

⁷² For Anatolia the best reference is Kurt Bittel, *Prähistorische Forschung in Kleinasien Istanbul Forschungen*, bd. 6, pp. 147. Istanbul, 1934. A useful series of battle-axes is illustrated.

⁷³ S. Fuchs, *Die griechischen Fundgruppen der frühen Bronzezeit und ihre auswärtigen Beziehungen*. Berlin, 1937. Especially pp. 95–139.

⁷⁴ At Eutresis (H. Goldman, *Excavations at Eutresis in Boeotia*, 123 and fig. 169. Cambridge, Mass., 1931) and at Hagios Mamas (Heurtley, *Prehistoric Macedonia*, 172 and fig. 46a. Cambridge, 1939), both sites which have yielded battle-axes, a few corded ware sherds have been obtained. So far as I know, no similar finds have been made in Asia Minor.

⁷⁵ Virchow in *Z. für Ethn. Verh.*, 1879, 269.

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Aryan language.⁷⁶ From Kültepe, in addition to the clay model of a horse's head already mentioned, there comes a cylinder-seal impression on a Cappadocian tablet, whereon is depicted a two-wheeled vehicle closely resembling those on the Royal Standard of Ur,⁷⁷ but drawn by horses instead of onagers.⁷⁸ It may be noted that not only is the vehicle on the Kültepe seal of Sumerian type, but the method of harnessing is also Sumerian: the reins are drawn in such a way that they can only have approached lip-rings of the type used for onagers in Mesopotamia.⁷⁹ Finally, one may cite two copper rein-terrets from Boghaz-Keui which agree closely with that found by Woolley in Queen Shub-ad's grave at Ur and reproduced in *ANTIQUITY* (1935, pl. 1., opp. p. 133): yet on one of these terrets we find the earliest representation of the horse from Hither Asia,⁸⁰ a dramatic scene, depicting a man in the act of taming a horse. In other words we have the spectacle of newcomers introducing the horse, yet harnessing it to vehicles of Sumerian type by means evolved in Mesopotamia, from which the horse was as yet unknown. The conclusion is irresistible that the horse was brought into Asia Minor by people who had not themselves harnessed it to wheeled vehicles, warriors issuing from that home of battle-axes and horses, the belt of open country which extends from the Baltic to the Black Sea.

⁷⁶ e.g. Fritz Schachermeyer, 'Wanderungen und Ausbreitung der Indogermanen im Mittelmeergebiet', *Hirt Festschrift*, 233-5. Heidelberg, 1936.

⁷⁷ As in the Ur representations the two wheels have been shown one in front of the other, and the high front of the vehicle has by the same convention been unfolded so as to be fully visible in profile. See E. Meyer, *Reich und Kultur der Chetiter*, figs. 43, 44.

⁷⁸ See Hilzheimer, *ANTIQUITY*, 1935, XI, 133.

⁷⁹ Claude Schaeffer has shown ('Neues zur sumerischen Anschirrung', *P.Z.*, 1935, XXVI, 203) that Hilzheimer erred when he wrote of *nose-rings*.

⁸⁰ Referred to the latter part of the 3rd millennium by Rostovtzeff (*Syria*, XII, 48-59) and other leading authorities (e.g. H. R. Hall and W. Andrae).

Nigerian Bronzes: work from Ife

by K. C. MURRAY

AFTER a little experience of West African peoples, a European becomes aware that their culture has become much degraded, although very many admirable features remain. During recent centuries two external forces have been exerting their influence on this part of the world:—Islam has entered from the north across the Sahara, and Europeans from the south by the sea. Islam destroyed what existed before, but in its place built up a new civilization which had its own virtues. Europe in its slave-trading from the 16th to the 19th century destroyed and gave nothing except brutality until, about one hundred years ago, it introduced Christianity, education, and mechanical devices. Because historical records do not exist to correct the external impression, a European might now, from a casual glance, easily think that the Negro is being raised by Islam and Europe from an original state of savagery. The reaction, therefore, when any examples of superior craftsmanship or art have been discovered has been to declare the work not African in origin, but European. Perhaps this attitude, which even yet exists, has led to the neglect of West Africa by archaeologists. When, after the sack of Benin by a British punitive expedition in 1897, a number of bronzes and fine ivories were brought to England from that city, some to be sold as scrap material, the common verdict was that the best were the work either of Portuguese or of men working under their direct influence, while those of less quality were made by Africans who, after the withdrawal of Portuguese influence, had gradually returned to their barbarous negro ways until their city became the 'City of Blood'.

Apart from prejudice, the evidence that the Benin bronzes were made under Portuguese influence is based on the following facts¹:—(a) the Portuguese visited Benin in 1485 and, according to local tradition, it was about then that the finest bronzes were made; (b) Portuguese soldiers in the equipment of the 15th and 16th centuries are represented

¹ See C. R. Read and O. M. Dalton, *Antiquities from the City of Benin*. 1899.

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in some of the bronzes ; (c) a Benin tradition collected in 1897 states definitely that the people learnt to work in bronze from a white man in the time of king Esige, who reigned at the beginning of the 16th century ; (d) analysis of the bronze suggests that the copper came from the Iberian peninsula.

On examination the evidence is found to be very flimsy. No attempt is made to show that the Benin style of work had any resemblance whatever to 15th century Portuguese work. The fact that Portuguese with fairly accurate details of their equipment are represented in some of the plaques proves nothing, since the representations of Africans are equally detailed and, moreover, the proportions of the figures with large heads and short legs are characteristic of African work. The belief that a white man introduced the work appears at first sight to be stronger evidence, but a date is given for its commencement before the coming of the Portuguese and, moreover, so-called 'white men' in the western Sudan have been generally accepted as Berbers or people from the Nile valley. The 'white man', therefore, was not necessarily a Portuguese. The analysis of the bronzes is equally unconvincing, for while it offers the possibility of Iberian origin for the metals, it does not disprove by the analysis of metals from other sources that they have other origins, while in any case the bronze could have been imported along the trade routes across the Sahara.

The arguments for Portuguese origin for Benin bronzes failed to explain why nothing resembling them had been found elsewhere along the coast, and disregarded the Ife traditions for which such evidence might be found. Ife is the traditional home of the Yoruba tribe ; from there went the children of the founder to establish the various Yoruba States, of which Benin was one. The king of Benin acknowledged the spiritual suzerainty of the Oni, or king, of Ife ; and at the time the Portuguese came to Benin the connexion was still maintained. The Bini ambassador who went to Portugal at the end of the 15th century described a great king named Ogane, whose assent according to ancient custom was necessary on the accession of a new king of Benin to whom he sent a staff, a cap of brass and a cross. This ruler, now believed to have been the Oni of Ife, was supposed by the Portuguese to be Prester John.

In 1910 Leo Frobenius visited Ife and discovered a beautiful bronze head known as the Olokun (PLATE I). This has recently been placed in the palace of the Oni, where there is a fine life-size bronze

PLATE I



BRONZE FOUND AT Ife, NIGERIA, REPRESENTING OLOKUN, THE SEA GODDESS, MOTHER OF OBALUON I, THE SECOND ONE, OR KING, OF Ife
Pl. I. H. Duckworth



BRONZE MASK OF AI AIYE MORE, OBALUON II, KING OF YORUBA
Pl. I. H. Duckworth

PLATE II



BRONZE HEAD FOUND AT IFE, NIGERIA, 1938

Pl. L. H. Duckworth

PLATE III



BRONZE HEAD FOUND AT ILE, NIGERIA, 1938

The bronze has turned a beautiful green

Pl. 1 H. Duckworth

PLATE IV



SIDE VIEW OF BRONZE HEAD FOUND AT Ife, NIGERIA, 1938

The small holes on the face penetrate to the interior

Dr. J. H. Dinkworth

NIGERIAN BRONZES : WORK FROM IFE

mask known as the Obalufon² (PLATE IV). In 1938, during the building of a house, eleven more bronze heads (see PLATE III) were found and brought to the palace. Two others which were not seen by the Oni were taken to America³, and another obtained by an English journalist was fortunately secured by the British Museum. Since then other finds have been made, including part of a complete figure, but they are now protected by a Government ordinance and kept at Ife, though not with the care that their value and beauty deserves.

These bronzes revolutionize the common assumptions about negro art : they are more akin to the sculpture of the Renaissance than to the typical art of Africa. An extraordinary thing about them is their faultlessness of workmanship and their isolation as a style. None has been found at Ife which suggests their evolution : there is nothing to show progress up to, or decline from, their perfection.⁴ Except in one instance (at Tadda in Nupe province), no other bronzes have been found that have any direct resemblance. Some people have thought that they were not made at Ife, but were brought from elsewhere. The heads represent people of refined negroid type, so were probably made in West Africa. The existence of the delicate terracottas in an identical style makes it unlikely that they could have been brought from far ; but if they came from some distant place then the occurrence of the *cire perdue* technique among neighbouring tribes remains to be explained, and especially how the early work at Benin came to be so good. It must be remembered that negro art is at present mostly represented by wood-carvings, of which few examples can be more than a century old. Yet even among these, which are the product of a time of complete political and religious disruption, it could be shown that naturalism is a more frequent occurrence than is commonly supposed.

Frobenius believed that the Ife bronzes and terracottas were made during the second millennium before Christ, and were the product of a civilization that followed a much older ' Atlantic ' culture, which had spread eastwards into the Mediterranean and southwards along the coast of Africa.⁵ He recognized certain cultural features that are

² The present Oni in a letter states that the Obalufon (and the Lajuwa, one of the finest of the terracottas) ' have always been at the Afin since they existed '.

³ *Illustrated London News*, 8 April 1939.

⁴ With further investigation it may be found that the terracottas divide into an earlier and a later group.

⁵ Leo Frobenius, *Voice of Africa*. London, 1913.

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common to North and West Africa, but are not found inland in between. He claims that certain resemblances between the Yoruba and Etruscan cultures were due to this common origin, among which were features in their terracottas, and in the use of a flower and bud design which appears in the diadem of the Olokun. This Atlantic state in Yoruba land had, however, been isolated from its mother country and so was forgotten at the time of the reported circumnavigation of Africa by the Phoenicians in 610 B.C., and of the Carthaginian expedition under Hanno in 500 B.C. It is not denied that there are traces of Carthaginian influence in West Africa⁶ yet Frobenius's theory is generally considered far fetched. Amaury Talbot has tentatively suggested⁷ that a bronze pendant found in the Cross River district may be Carthaginian, but comparison with bronzes found near Awka suggests that another and more recent origin is probable.⁸

The Ife bronzes, in spite of the convincing arguments of Ling Roth⁹ and Amaury Talbot¹⁰ are believed by some to be the work of Portuguese. It is claimed that about 400 years ago Ife became for a time Christian, and that this religion, together with bronze working, were probably brought by Portuguese from the Roman Catholic mission which had been established near Benin at the end of the 15th century. There is no record whatever that the Portuguese ever went to Ife, or even penetrated beyond Benin. Moreover if Christianity did reach Ife it could as well have come from the east as from the coast. Contrary to work going to Ife from Benin it is said that the Bini obtained bronze masks of their deceased kings from Ife, and that the first brass-caster came to Benin from that town in 1380. If the Portuguese had been responsible for both the Ife and the Benin bronzes and terracottas there would have been a close similarity in style, but this is not the case, whereas the latter have several features in common: the same method of casting—*cire perdue*—was evidently used; the heads are almost life-size, and most are cut off at the base of the neck, with holes in the top in which, in the case of the Benin bronzes and terracottas, elephant tusks were fixed. In style there is a complete difference. Ife work is refined and accurate portraiture, while that of

⁶ W. D. Hambley, *Culture Areas of Nigeria*. Chicago, 1935. Has some additional evidence of Carthaginian influences at Ife.

⁷ P. Amaury Talbot, *In the Shadow of the Bush*, pp. 172-3. London, 1912.

⁸ J. O. Field, *Bronze castings found at Igbo, Southern Nigeria*. *Man*, January 1940.

⁹ H. Ling Roth, *Great Benin*, pp. 226-34. London, 1903.

¹⁰ P. Amaury Talbot, *Peoples of Southern Nigeria*, vol. I, 280-1. London, 1926.

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Benin is conventionalized. A comparison of details is illuminating : for instance the difference between the subtle modelling of the Ife work and the smooth simplified curves of the Benin ; or the treatment of the eyes and ears in the Ife heads compared with these features in the well-known head of a Benin princess in the British Museum. The finest examples from Benin are the earliest, yet although they are more refined than the later and show some of the Ife sensitiveness, they are very different.¹¹ In order to prove that the Portuguese introduced bronze work into Ife it would be necessary to show a progression in style from the work of Benin to that of Ife. It would, however, be against all the evidence ; at no time, indeed, does Benin work show any development towards naturalism : its whole tendency is the reverse, and modern Bini and Yoruba work, especially brass-work, is almost completely formularized.

Another and more likely theory suggests that Egypt was the originating influence of the Ife industry. It is known that from very early times western Sudan must have had connexions across the Sahara with North Africa and Egypt, and in all parts there are cultural features that point to this relationship. The origin of *cire perdue* casting is not known, but Egyptians were using this method in 1600 B.C. The Yoruba, who are believed to have entered their present land between 1000 and 500 B.C., possibly on account of events in Egypt that set in motion a migration of peoples towards the west, have many features in their culture that must have been transmitted. Sir Flinders Petrie has drawn attention¹² to the resemblance in style between the Ife work and terracottas of the 6th century from Memphis. On one important point, however, he was misinformed : he thought that the terracottas, like those of Memphis, were modelled solid, and used this fact as a proof of their common origin. They are actually hollow and remarkably light. It is perhaps significant that the Ibo and Ibibio tribes, who preceded the Yoruba in Nigeria, and show very many signs of Egyptian influence, do not cast in bronze or brass. This fact, which indicates that the knowledge of bronze-working in Nigeria did not come from dynastic Egypt, also suggests that neither did the art exist in Nigeria in earlier times, but only began with the Yoruba.

¹¹ E. Von Sydow in *Africa*, vol. I, 1928, page 216 claims that certain terracotta heads from Benin (e.g. see Pitt-Rivers, *Antique Works of Art from Benin*, plate 46, figs. 365-6) are similar to those found by Frobenius at Ife, but a detailed comparison does not bear this out.

¹² Sir Flinders Petrie, *Ancient Egypt*, pp. 84 and 169.

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Legends concerning the origin of the Yoruba seem to deal with the establishment of a ruling dynasty. It is believed that in the second millennium before Christ a people known as the Kushites began to enter the Horn of Africa from Mesopotamia and later gradually spread westwards. Known as Zaghawa by the Arabs, they occupied, between A.D. 100–1000, the fringes of the Sahara from the Nile to the Niger, by what appears to have been a gradual infiltration of small groups who settled among and became the rulers of the inhabitants. It was then and in the following centuries that the Sudanese states reached their highest development, as confirmed by Arab writers of the 14th century. In degree of civilization their culture seems to have differed little from other pre-machine age cultures. Among the Kushites were traces of Christianity, for they had been in close touch with that religion in Egypt and Ethiopia, and some of them indeed may have been Christians of the Coptic Church. They brought many crafts with them and in Sir Richmond Palmer's opinion, 'it is hardly open to doubt that the crafts and arts for which today the Jukun, Hausa, Nupes and Songhay are famous . . . were brought by the Kushite Zaghawa races, or parts of them'.¹³

According to the account by Sultan Bello of Sokoto collected by Clapperton the Yoruba were of the tribe of Nimrod, and coming from Arabia crossed Africa to their present territory, leaving some of their own people in every place where they stopped.¹⁴ They claim for their ancestors relationship with the kings of Gobir and Bornu, and that Oduduwa, the founder of their race, was the leader of a band of Bornu immigrants. It is interesting to note that Oduduwa's wife is said to have been Omonide—the child of brass.¹⁵ More particularly are they connected, together with other states including the Jukun, the Nupe and Songhay, with a migration from the east that took place in the 7th century A.D. and centred round a certain Kisra, whose name has been identified with that of Chosroes, the Sassanian king of Persia who attacked Egypt at that time. Kisra, after passing through Bornu, reached the Niger, from whence part of his followers went to Nikki in Dahomey and part remained with him at Bussa in Borgu. The establishment of a Nupe kingdom to which the Yoruba paid tribute for

¹³ Sir Richmond Palmer, *The Bornu Sahara and Sudan*, p. 148. London, 1936.

¹⁴ Denbigh and Clapperton, *Narrative of Travels and Discoveries*, p. 165. London, 1826.

¹⁵ R. E. Dennett, *Nigerian Studies*, p. 75. London, 1910.

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600 years is associated with him, and there is a tradition that about 650 they had a new dynasty that came into the country by way of Borgu. According to Frobenius the Yoruba threw off their subservience to the Nupe about 1275, and Amaury Talbot dates the beginning of the Yoruba dynasty at Benin to 1300. If these dates are correct they suggest that the departure of the descendants of Oduduwa to found the various Yoruba states took place at the end of the 13th century. Lajuwa and Obalufon, who are represented by a terracotta and a bronze mask respectively, were rulers who would have been living shortly after that time.

Bronze work in West Africa is done by tribes coming within the area possibly influenced by the Kisra peoples. The Nupe now beat out utensils such as bowls, but they and the Hausa still do some *cire perdue* work. At Jebba and Tadda on the river Niger in Nupe are some complete ancient bronze figures : one squatting figure has a head resembling Ife work, but the others are different in style. The Yoruba still do *cire perdue* casting, and so do the Dahomians and the Ashanti. The Jukun at one time had a great reputation for their metal-work, and Frobenius mentions a Nupe belief that the craft came from the Benue. The Igla are related to the Yoruba ; and their ruler, the Atta, has among his regalia two fine bronze masks, which appear to be early Benin work.¹⁶ The Tiv in Benue province, the Bura in Bornu province, and the Bamun in the Cameroons—who describe the art as an adaptation from an invading people from the northeast¹⁷—possessed the technique, and so have the Bobo, Mossi and Baoule much further west who may have obtained it through Songhay.

It is difficult to relate certain stone carvings in Yoruba country with the bronzes and terracottas. Some are at Ife and include monoliths, carved figures, and quartzite stools, but are not nearly of such fine workmanship as the bronzes and terracottas. Even allowing for the difference in material, it is hard to believe that these stone carvings could have been made at the same period. A few, mostly in east Nigeria, appear to be of great antiquity, but some found in Ilorin province seem to be of recent date.¹⁸ Of these there are said to be two types : the older one carved in sandstone, and the more recent in soap-stone. Published photographs do not distinguish these, but most have the

¹⁶ G. M. Clifford, *A Nigerian Chieftdom*. Journal of the Royal Anthropological Institute, vol. LXVI, 1936.

¹⁷ W. D. Hambley, op. cit. p. 400

¹⁸ F. de F. Daniel, *The Stone Figures of Esie*. J.R.A.I. 1937.

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characteristics of modern Yoruba wood-carvings : for instance, large eyes isolated from the face.

The source of the materials used for the Ife and other Nigerian bronzes is a problem whose solution would help to show their origin. Tin and zinc provide little difficulty, for ancient lead and zinc mines exist in Ogoja province and tin was worked in Bauchi province. Various writers have stated that copper could be found in Nigeria. For instance Amaury Talbot says ' there is little doubt that up to recent years it was obtained from many local sources ' and mentions the Ogoja mines.¹⁹ Richard Burton wrote in 1863 that ' Copper is said to be found in the mountains to the east of Abeokuta '²⁰ and ' Kakanda . . . extends from Yoruba Proper to the Niger and Kwara rivers. This province is very little known, but the people are celebrated for working copper, of which they are supposed to have mines. In Kakanda is the celebrated Ife ' . . .²¹ Macgregor Laird in 1833 tried without success to get some of the ore used in making the copper articles that he saw ; but the natives all agreed ' that it came down the Shary (Benue) from the eastward '²²

The Director of the Nigerian Geological Survey states in a letter (April 1940) :—

' Small amounts of copper ore are known from many parts of Nigeria but no large deposits have been found.

In the abundant lead-zinc deposits of Ogoja province copper ore is sometimes present and it is evidently to this that Talbot refers.

Samples of mixed ore in which copper is a prominent constituent have been sent to this Department from Niger and Sokoto provinces and such ores are known to occur in Plateau province ; but the veins from which they come are small and have not been worked in time prior to European contact with West Africa.

There are no indications that copper mines existed between Ife and the Niger, or east of Abeokuta. Had there been as late as 1863 there would be traces of them today and they could not have escaped the attention of Administrative Officers or intelligent Africans.

Macgregor Laird's report has always been of considerable interest and if true the origin of the copper ore is indeed a mystery. Similar lead-zinc deposits to those of Ogoja are known both north and south of the Benue at Zuruk and Arufu but the amount of copper in these is negligible. There is no record of any other large mines or excavations in this part of Nigeria. One is forced to believe that the ore must have been brought from a great distance and far from the boundaries of what is now Nigeria '.

¹⁹ P. Amaury Talbot, *Peoples of Southern Nigeria*, I, 18.

²⁰ Richard F. Burton, *Abeokuta and the Cameroons Mountain*, I, 133. 1863.

²¹ Richard F. Burton, op. cit. p. 226.

²² Macgregor Laird and R. A. K. Oldfield, *Narrative of an Expedition into the Interior of Africa*, I, 231. 1837.

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There are two sources of copper outside, but within reach of Nigeria : Tegidda and Darfur. The former is known from Ibn Batuta's description of his visit in 1353. Copper ingots from there were exported to 'Gobir in the country of the infidels' and to Bornu. Henry Barth found nothing known of these mines when he visited Agades²³ and no trace of them has been found since. Tegidda is an important salt-making centre and therefore Sir Richmond Palmer suggests that possibly the word for copper—nahâs—is a corruption of natrun, salt.²⁴ There is no doubt, however, of the existence of copper at Darfur or of it being exported to Nigeria. Barth met a caravan from there carrying copper to 'as far as Kano towards the west, where this fine copper rivals the old copper which is brought by the Arab caravans from Tripoli'.²⁵ The copper that according to Macgregor Laird came down the Benue may therefore have been mined at Darfur, which had been inhabited before the 16th century by a Zaghawa tribe : the Taju or Daju, who were part of the Kwararafa confederation of tribes whose rulers were called Jukon by the Hausas.²⁶

Quantities of copper and brass were also imported into West Africa from across the Sahara. E. W. Bovill has an interesting reference to an Italian who travelled in Africa in 1477. 'He found in Tuat a demand for many kinds of goods, but the chief articles of commerce were copper and salt, the former being imported from Alexandria for sale to the Sudan, though what the negroes could want with it he was at a loss to understand'.²⁷

The comparative lack of copper in Nigeria and the non-existence of bronze working among the older tribes make it unlikely that the craft started in that territory. It seems probable that it was introduced by a branch or branches of the Kushites, possibly by Kisra, who would have passed through Darfur on their way to Bornu and Nigeria. Other crafts, to judge by their distribution in Nigeria, may have come to the Yoruba about the same time : the use of the narrow treadle-loom, tied dyeing, and interwoven patterns in wood-carving. It is not clear whether Oduduwa had any connexion with Kisra or whether he succeeded or preceded him, but since bronze work appears in the areas connected with Kisra it might be assumed that the industry did not

²³ Henry Barth, *Travels and Discoveries in North and Central Africa*, I, 465. 1857.

²⁴ Sir Richmond Palmer, *op. cit.* p. 73, note.

²⁵ Henry Barth, *op. cit.* III, 347. See also pp. 557 and 559.

²⁶ Sir Richmond Palmer, *op. cit.* p. 146-7 (also pp. 191, 212-13).

²⁷ E. W. Bovill, *Caravans of the Old Sahara*, p. 134. 1933.

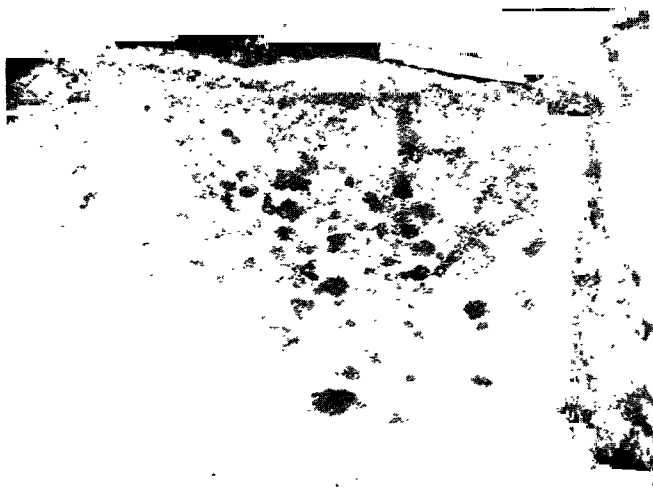
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begin among the Yoruba before the 7th century, and that it came to perfection at Ife not later than the 13th century, when that town was once more independent of Nupe. If, as the belief suggests, a bronze worker went from Ife to Benin about a century later to teach the craft there, the similarities as well as the differences between the earliest Benin bronzes and those of Ife could be understood. The Benin craftsmen simplified and conventionalized the style they had learnt from Ife and altered its proportions. Although the art kept its realistic basis, as opposed to the imaginative basis of most negro art, it tended to become more typical.

Further research and systematic excavation, which has never yet been carried out, is needed to confirm these suppositions, and to establish the relationship between the different forms of bronze and brass work in West Africa. There has been no history written except Frobenius's *Voice of Africa* which has studied the Yoruba and their early legends, and followed their relationship with other peoples of similar culture back across the Sahara to Upper Egypt. Thus E. W. Bovill's *Caravans of the Old Sahara* only deals with the northern Sudanese states and not with their eastern connexions, while Sir Richmond Palmer in *The Bornu Sahara and Sudan* does not trace the movements he records into Southern Nigeria.²⁸ Excavations made at Ife should produce valuable information, and might also be fruitful at other places, for instance at Kororofa, the old capital of the Jukuns and at the holy hill mentioned by Frobenius.²⁹ It is most improbable that the evidence of the former civilization of West Africa has been exhausted.

²⁸ P. Amaury Talbot in *Peoples of Southern Nigeria* and C. K. Meek in *Northern Tribes of Nigeria*, 1925, give general descriptions of the legends and theories about the origin of the Yorubas.

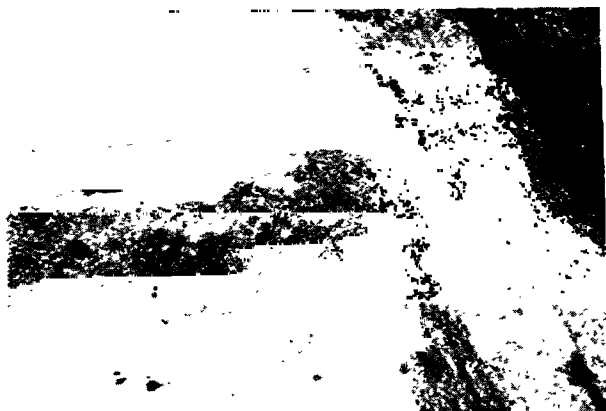
²⁹ Leo Frobenius, op. cit. p. 306.



1. NORTH END OF CIST, SAMSON



2. SOUTHEAST CORNER OF CIST, SAMSON



3. NORTHEAST CORNER OF CIST, SAMSON



4. CHARLTON DOWN, BERKS. RECTANGULAR
PLANK-LINING TO EARLY BRONZE AGE GRAVE

Notes and News

GROOVED STONE CISTS, SCOTLAND AND THE SCILLIES

The existence in Scotland of a group of stone-built burial cists in which the end-stones fitted into grooves cut in the lateral slabs has been known for some years, and a total of nine were recorded by Craw in 1930, all within a radius of one mile of Poltalloch in Argyll.¹ Outside this concentration the only example known seems to be that on Samson, one of the Scilly Islands, obscurely published in the nineteenth century and republished by Crawford in 1928.² No plan of the Samson cists has however been published, and that reproduced here was made by the writer in 1937, together with the photographs of details of the method of construction.

This curious variant on the simple stone cist raises several points of interest. In the first place, the laborious process of grinding out grooves to take the end slabs can only be the reflection of similar jointing in a more easily worked and sympathetic material, and be in fact a 'fossil' representative of a carpentry technique; the stone cists being in fact stone versions of wooden coffins, and the rarity of wooden objects of early prehistoric date in Britain renders them all the more important. The date of the cists in question is unfortunately not precisely fixed—no remains seem to have been found in the Scottish examples, while burnt bones and a flint flake were found in the Samson cist. But there seems good reason for assigning them to the Bronze Age, and probably to a relatively early phase, for in Scotland it seems difficult to dissociate the two grooved cists at Ri Cruin from the closely adjacent cist, the walls decorated with carved representations of flat metal axes and a stylized boat, which should certainly be Early Bronze Age in date.³ And there is some evidence of wooden coffins made of planks in Early Bronze Age graves—in the north of England one may note Greenwell's barrow LIX at Cowlam, where the inhumation (probably Early Bronze Age) lay in a grave lined with slabs of wood, and his barrow xxv at Ganton, where a food-vessel interment lay on an elaborate

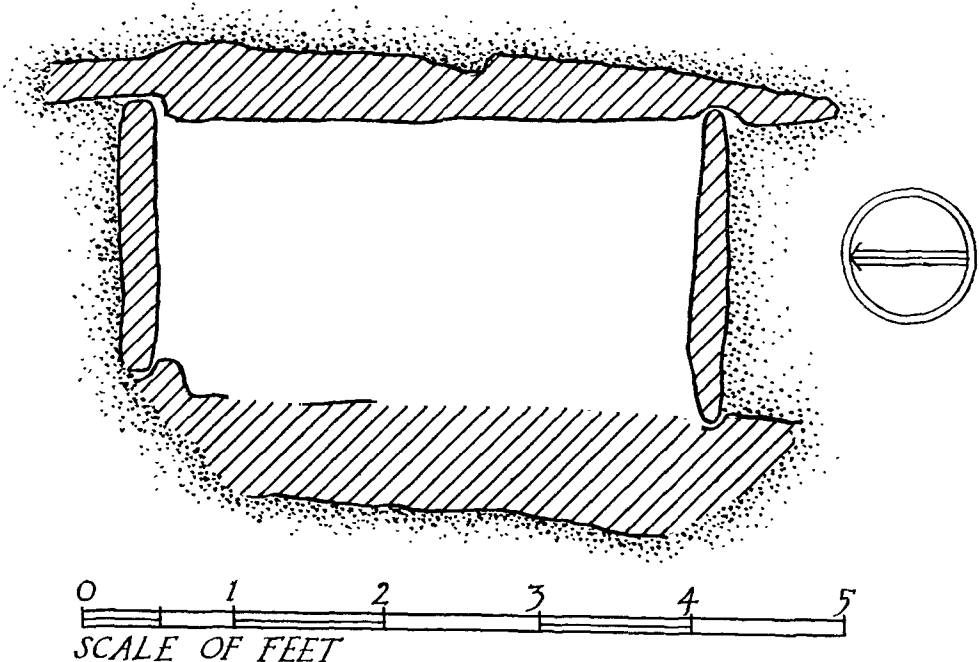
¹ *Proc. Soc. Ant. Scot.*, 1930, LXIV, 127-146.

² *ANTIQUITY*, 1928, II, 419, with refs.

³ Craw, loc. cit.

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wooden platform with a plank coffin or enclosure.⁴ Something similar existed in Mortimer's barrow c59 at Aldro (also food-vessel), and a plank coffin certainly seems to have been present in his barrow 14 (Calais Wold) with a food-vessel, and barrow c55 (Garton Slack) with an undated inhumation.⁵ In a barrow on Charlton Down, Berks, a large grave suitable for an inhumation contained at the bottom a rectangular enclosure defined by four planks, within which lay a



CIST ON SAMSON, ISLES OF SCILLY

cremation, a flat bronze dagger and an awl.⁶ Wooden 'boxes' containing Early to Middle Bronze Age cremation burials in Wiltshire have been noted by Clay.⁷

The actual technique of jointing at right angles in wood by means of a groove and tongue is attested by the method of fitting the base into the sides of the wooden tub from Stunthey Fen, which contained a

⁴ *British Barrows*, 225, 170.

⁵ *Forty Years*, 69, 157, 219.

⁶ *Trans. Newbury Field Club*, 1939, VIII, 109-116.

⁷ *Wilts. Arch. Mag.*, 1929, XLIV, 103.

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Late Bronze Age hoard, and as Clark pointed out in publishing the find, precisely similar tub-construction occurs at Glastonbury in the Iron Age.⁸

The geographical distribution of these grooved stone cists, with the West Scottish concentration and the solitary outlier in the Scillies, shows how intimately remote points on the Atlantic coasts might be connected by sea-borne traffic in the Early Bronze Age. The gallery-graves of the Scillies find close parallels in the region of Waterford Harbour, and the megalithic routes did not stop here. The present writer recently drew attention to the connexions between the *Ri Cruin* carvings mentioned above and those from the Early Bronze Age barrow near Badbury in Dorset.⁹ If connexions between Wessex and Argyll were established at this time, it is hardly surprising that the Scillies, on the main line of the western seaways, should receive some ideas from the north.

STUART PIGGOTT.

EARLY ENGLISH SETTLEMENT, SOUTHWEST SCOTLAND

In the seventh century southwest Scotland came under Northumbrian control. This control involved more than a change of rulers or of over-lords. In certain areas there was Anglian settlement. This was sparse in comparison with the English colonization of the eastern Lowlands, but place-names, of which the significance may have been overlooked, point to a wider distribution of such settlement than has hitherto been generally recognized.

Bede refers to Cunningham in Ayrshire as a district of the Northumbrians in 696 (*Ecclesiastical History*, v, 12). As he gives the name—Drithelm—of an English *paterfamilias* of this district, it is evident that Anglian settlement had taken place. This suggests that 'Cuneningas', the older form of the name of Cunningham shown on the north sheet of the *Map of Britain in the Dark Ages* (Ordnance Survey, 1938), may contain that *-ingas* termination which marks some of the oldest Teutonic place-names in England. A possible extension of English settlement eastwards from Cunningham across the moors that divide Ayrshire from Clydesdale may be represented by Eaglesham (1158, Egilsham) in Renfrewshire. Ekwall says that as a class names with the suffix *-ham* are earlier than those with *-tun* (*Concise Oxford Dictionary of English Place-Names*, p. xiii): and in southeast Scotland no name of

⁸ *Antiq. Journ.*, 1940, xx, 54.

⁹ *Ibid.*, 1939, xix, 291-99.

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this class occurs west of a line drawn from Morham (East Lothian) by Kimmerghame (Berwickshire) to Midlem (c. 1120, Middelham—Roxburghshire). Thus all are in those areas which would first be occupied by English invaders.

English settlement in Cunningham implies previous control of Dumfriesshire by the Angles, for Nithsdale must have been their road to Ayrshire. The presence of Anglian Christianity is shown by the Northumbrian crosses at Ruthwell, Closeburn and Nith Bridge in Nithsdale and in Annandale at Hoddum and Wamphray. Place-names of the earliest Anglian types are absent, but it is possible that the word 'Dumfries' (Dunfres) is itself evidence of Teutonic colonization. Skene believed that this name indicated early settlement by Frisians, representing 'the town of the Frisians, as Dumbarton is the town of the Britons'. Professor Watson has felt unable to accept this derivation. 'The difficulty here is that there is no independent ground for believing that the Frisians ever settled in Dumfries; the first Teutonic invaders were the Angles in the seventh century, and they are always called "Saxons" both in Gaelic and in Welsh' (*History of the Celtic Place-Names of Scotland*, pp. 421-2). It is, however, now possible to point to some evidence that may justify a modification of this verdict.

In the first place it has been established on archaeological grounds that the Humbrenses, whose northern settlements became known in the eighth century as 'Nordanhymbri', were more closely connected with the inhabitants of the 'terpen' or artificial mounds of the marshy shores of Frisia than with those of any other part of the continental coastline. It has further been shown that the *Historia Brittonum* of Nennius refers in two passages to the Northumbrians, in connexion with events of the seventh century, not simply as 'Saxones' but as 'Saxones ambronum' or 'genus ambronum', the Ambrones being a real people whose homeland and habits of piracy link them with the Saxons and the Frisians, and whose name is preserved in the North Frisian island of Amrum. (J. N. L. Myres, 'The Teutonic Settlement of Northern England', *History*, xx, 254, 259, 260). Thus, whether or not Frisians ever settled in Dumfriesshire, a considerable part of the Northumbrians, even if Angle by race, came to England from Frisia, and Welsh-speakers knew them by a tribal name which had Frisian connexions, if it was not actually the name of a Frisian folk. May not the Celtic neighbours of a fortified village of 'Ambrones' on the Nith have called it 'the Frisians' fort'?

West of the Nith in Galloway, when Bede wrote, Whithorn

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(Hwiterne) was 'in the province of the Bernicians', and in 731 contained so many Christian Northumbrians that the see of Candida Casa had lately been constituted to give them a bishop of their own race and language (*Ecclesiastical History*, iii, 4; v, 23). English personal names are mentioned in connexion with miracles wrought at the tomb of St. Ninian in an eighth-century poem composed at Whithorn (ANTIQUITY, xiv, 289), and crosses found at Whithorn and St. Ninian's Cave are inscribed in Anglian runes. Penninghame (1576, Pennegem) in the north of the Machers peninsula may contain an early termination in *-ham*.

Upon Whithorn the Northumbrians can have kept a hold by sea more easily than by land through the naval power of which Ecgrith's expedition to Ireland in 684 is an example. It would be strange if their attention had not been attracted to the Galloway estuaries that lie between the Machers and the Nith, and place-names do in fact seem to indicate that lesser English colonies on the Galloway rivers linked the two main centres of Northumbrian influence at Whithorn and in the county of Dumfries. The parish name of Twynholm (c. 1200, Twenham), which means 'between the waters', that is, presumably, between the Water of Fleet and the Dee, suggests that English settlers may have reached this district by sailing up one or other of these tidal streams. It must have been Anglian influence which was responsible for the introduction east of the estuary of the Dee of the cult of St. Cuthbert and St. Oswald, shown by their commemoration respectively at Kirkcudbright and at Kirkcarswell, north of Dundrennan.

Farther east, north of Dalbeattie and near the head of tidal water on the Urr, are the castle, park, loch and moss of Edingham. It is suggested that Edingham should be identified with 'Edyngaheym', which is included with Hodelme, Abermelc and Driuesdale in the account given in the *Registrum Vetus* of the bishopric of Glasgow of the 'Inquisitio' ordered by Earl David (later King David I) as to the lands which of old had belonged to the church of Glasgow (Sir Archibald C. Lawrie, *Early Scottish Charters*, pp. 46, 303). Hoddum, Abermilk (St. Mungo) and Dryfesdale are adjoining parishes in Dumfriesshire. Edingham is in Kirkcudbrightshire, but came within the bishopric of Glasgow since it is situated east of the Urr Water, which in the Middle Ages was the boundary between the sees of Glasgow and Galloway.

If this identification be accepted, we have in Edingham one of those English place-names with the habitation suffix *-ingaham* which are

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believed to have been formed not later than the eighth century. This would mean that Anglian settlers made their homes on the Urr Water at approximately the same time that other Northumbrians were establishing themselves in the Machers and in Dumfriesshire. The name of the parish of Buittle (1381, Butyll, that is, O.E. *botl*, a booth or building) shows that an independent settlement arose later on the edge of the hilly country that lies west of the Urr.

W. R. KERMACK.

A MICROLITHIC INDUSTRY, GOLD COAST

For some time I have been sure from surface finds that there was a microlithic¹ quartz industry in the Gold Coast. Numbers of small quartz flakes were collected by Captain R. P. Wild from hill rubble at Obuasi, and from Nkraa camp, where, on ground cleared for a bungalow, they were associated with celts, stamped pottery and iron slag. (Some of these were given to the British Museum and the Museum of Archaeology and Ethnology at Cambridge). A large number came from a 'floor' at Abomposu. Here several pounds weight were collected, and some were sent to Cambridge, but little notice was taken of them. A scraper, pronounced by Mr Braunnholtz to have the appearance of belonging to a Wilton facies, was found on Government Hill, Tarkwa, and a typical 'lunate' was found by the writer on Monkey Hill, Obuasi. I recently found an area at Ntronang where the ground was littered with small quartz flakes, and in this case there were also definite microlithic forms. I have also been sure that the celts² of the Gold Coast only represented part of the lithic industry of their makers, and I have also wondered much about the date of the biconically-pierced quartz discs³ which are such a puzzling feature of the antiquities of this country.

An excavation on behalf of the Achimota College Anthropology Museum in 'Bosumpra boom'—the cave once the home of the Bosumpra spirit, at Abetifi, Kwahu—has recently thrown some light on these problems. A trench from the back of the cave to the outer lip, and continued down the slope outside, revealed deposits six feet

¹ cf. Microliths from Wana, Nigeria, given to the British Museum by I. D. Hepburn in 1931, and from Dakar, in the L'Institut de l'Afrique Noire Occidentale at Dakar, collected by Theodore Monod.

² R. P. Wild, 'Stone Artifacts of the Gold Coast and Ashanti', *Gold Coast Review*, 1927, III, 157-194, and 'Nyame Akuma or God Axes', *ibid.*, 1931, V, 150-55. Balfour, 'A Collection of Stone Implements from Ejura, Ashanti', *Journ. African Society*, 1912.

³ H. S. Newlands, 'An Archaeological Puzzle from West Africa', *Journ. Royal African Society*, XIX, 40-43.

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thick, the first layer of which contained modern and comparatively recent pottery, sandstone 'rubbers' and a piece of an iron-smelting tuyère. Below this occurred a most prolific microlithic industry, mostly in milk-white quartz obtained from gravel near by, but a few artifacts were made of chert from further away. This industry includes petit tranchet forms, lunates and backed blades, burins, as well as cores, rough scrapers and points. A small number of celts occurred, mostly of type iv (short and stubby, elliptical cross-section), although there was one fairly large example of type v (flat, broad, rounded cutting edge, rounded butt, slightly curving sides); these were made of greenstone imported from at least ten miles away. There was also a large number of greenstone fragments, both the by-products of manufacture and of use. Three examples seem to be rough-outs for grinding; others show some ground surface. No grooved grinding stones were found, such as have occurred elsewhere, and although I have searched the surrounding rock-faces fairly thoroughly, have not been able to discover any grinding grooves; nor were there any on the rocks uncovered by the excavation. There was however a number of small quartz pebbles with one or two faces ground to a flat surface by prolonged use. These two facts appear to suggest that the grinding was done by rubbing a quartz pebble on the surface of the rough-out, not by rubbing the rough-out against a rock.

There was also a type of pottery, which extended into the lowest level, but was not present in the two upper levels, decorated by rows of pointed oval, or rectangular, depressions. Finally, there were two biconically-pierced quartz discs at depths between 3 ft. and 5 ft.

Excavation was cut short by the exigencies of war, but it is hoped to do further work, and to publish in full the results already obtained. It was thought that this preliminary note might be of interest, as such an association as that outlined above is believed to be the first of its kind for British West Africa, and probably for the whole of West Africa.

C. T. SHAW.

CURRENCY BARS

Sir Cyril Fox writes:—My friend, Mr C. F. C. Hawkes, F.S.A., points out that there is an omission from the list and distribution map in my note on Currency Bars (*ANTIQUITY*, 1940, pp. 427-433), which I am now allowed to record.

In 1919 a hoard of 'about 13 bars' was found on Worthy Down, Winchester, and published by R. W. Hooley, F.G.S., (*Antiquaries*

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Journal, 1921, I, pp. 321 ff.). The site is about 73 miles from Cinderford and the column on my graph (p. 431) numbered 13-17 should be lengthened by $\frac{1}{2}$ inch. The addition does not necessitate, I think, any revision of the argument presented.

SAINT CUTHBERT'S DWELLING ON FARNE

The *Anonymous Life of Saint Cuthbert*, recently edited¹ by Mr Bertram Colgrave, describes² his dwelling on the island of Farne in the following terms, here translated : ' And so after some years, desiring a solitary life, he sought the island which they call Farne, surrounded on all sides by water in mid-sea : where hitherto hardly anyone had been able to stay alone owing to various demon phantoms. These he routed in virtue of a mind which knew no fear, excavating almost a cubit deep into the earth through very hard and stony rock and preparing the area of the site. He also erected another amazing cubit above this, built with a mixture of earth and stones of a size unbelievable except to those who knew that so much of God's power was in him. And he made little houses there, from which he could see nothing but heaven above '. *Bede's Life of St. Cuthbert* adds³ that there were two of these little houses, one for an oratory and the other for a dwelling, while the enclosure was almost round, about 20 yards across.

It has long been recognized that the structure which St. Cuthbert built was something like a cashel. But there are closer parallels, perhaps more interesting in view of the early life of the saint. In the Cheviot and the Lammermuirs, where he had tended sheep as a lad, the type of structure which he was thus later to use as a hermitage was so common that it would have excited no remark. It is, in fact, the simplest form of homestead to be found there, and consists of a small ovoid enclosure surrounded by a composite dry wall faced with large orthostatic boulders containing a core of earth and small stones. There is one gateway, leading into a little court, excavated deep enough to drain the area and perhaps to contain some water, while beyond lie one or two circular huts, built in the same manner as the enclosing wall but on a smaller scale.

This interesting connexion between literature and archaeology has bearings in both spheres. The archaeologist will welcome a

¹ *Two Lives of St. Cuthbert*, Cambridge University Press, 1940. Reviewed ANTIQUITY, September 1940, p. 343.

² *Anonymous Life*, III, 1.

³ *Bede's Life of Saint Cuthbert*, 17.

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description of a type of dwelling which receives a notice nowhere else in literature, while the student of St. Cuthbert's life may find material for reflection in the thought that Cuthbert, when in search of further religious experience, reverted to the conditions under which he must often have lived as a shepherd-lad. It was in those days⁴ that he had seen his first vision, of angels bearing St. Aidan's soul to paradise.

IAN A. RICHMOND.

MAJOR G. ALLEN

The premature death of Major George Allen, F.S.A., is an irreparable loss to British archaeology. He was the first civilian pilot to take up archaeological air-photography in this or any other country, and he achieved brilliant success. He realized that the technique had to be studied and developed; he made his own camera and developed the technique to a point that has been reached nowhere else. Every year he took several hundred photographs of sites, the majority of which he discovered himself. Not only therefore did he create the method, but he became, in the process, an archaeologist. By this very practical application he actually discovered many hundreds of new sites (mostly crop-sites), some of them of the first importance. He was always ready to photograph sites that other people were excavating—Maiden Castle for instance—and his beautiful photographs became a regular feature of excavation reports, books on British archaeology, and of this journal. All this he did for the love of the thing, entirely at his own cost. His generosity and self-effacement were conspicuous and in the very best tradition of British archaeology, which from the days of the great pioneers (Aubrey, Stukeley, Horsley, Colt Hoare, Evans, Pitt Rivers) down to the brilliant and equally heroic inter-war period, has always been the strongest in the amateur line. He was an outstanding example of the virtues of individual enterprise. Over and above this he was a charming companion, and one whose death is felt as a grievous personal loss by the present writer and by all his friends. It is a consolation to think that his work will live after him in his large collection of negatives (bequeathed to the Ashmolean Museum, Oxford), which will provide both inspiration and rich veins of ore for the archaeologist of the new world that must come some day. O.G.S.C.

⁴ *Anonymous Life*, I, 5. It may be remarked that the imagery of this vision, if considered as a bright spirit in the hands of the spirit-multitude, is thoroughly Celtic, and no doubt reflects the environment of Cuthbert's early youth, translated into Christian terms. So also is the idea that islands were the abode of demons (see *ANTIQUITY*, XIV, 194).

Reviews

UGARITICA : ÉTUDES RELATIVES AUX DÉCOUVERTES DE RAS SHAMRA (*Mission de Ras Shamra, tome III*). By CLAUDE F. A. SCHAEFFER. Paris : Geuthner, 1939. pp. 325 and 32 plates. 200 francs.

The ruins of the City-State of Ugarit, the modern Ras Shamra on the North Syrian coast just opposite Cyprus, have already yielded a sequence of stratified cultures going back to the fifth millennium B.C., tablets written in the oldest known alphabetic script, archaeological links between the Aegean, Egypt, Mesopotamia and Anatolia, and texts of unique importance for the history of Semitic religions. A series of nine excavation reports in *Syria* has kept the scientific world informed of the progress of discovery, and a certain number of the more exciting texts has been published in that journal or elsewhere ; so that, including commentaries and reviews, the bibliography of Ras Shamra, attached to the present volume, already contains over five hundred entries ! *Ugaritica* is to contain a series of studies which will form the definitive publication of the site when completed. The first volume of these before us is illustrated by 123 line drawings and half-tones (better reproduced than is usual in French publications) and 32 first class photogravures. The first chapter summarizes the history of the city as known down to 1938 in words almost identical with those of the author's Schweich Lectures, published by the British Academy in 1939.

The lowest level of habitation, known only from test pits, revealed a pre-ceramic neolithic, perhaps comparable to that of Jericho or Cyprus. Immediately above it comes the classical East Mediterranean neolithic characterized by polished black and red ferruginous wares such as occur in the lowest levels of other tells in North Syria, like Sakje-geuzi, and at Mersin, and at least technically related to the neolithic of Knossos in Crete. Then in level iv (counting from the top) the monochrome wares give place to the painted Tell Halaf pottery, now familiar all across the steppe-piedmont belt of the Fertile Crescent from Assyria east of the Tigris to Cilicia. The technical affinities of its glaze painting prompt some general remarks on the debt of Early Minoan Crete to Asia. In level III as in Assyria, Tell Halaf ware is replaced by that named after the site of Al 'Ubaid near Ur in Sumer, but some of the latest fragments suggest comparison with the more recent Jemdet Nasr style of Babylonia. After these settlements, which on Mesopotamian chronology should go back to the fourth millennium, there supervene strata marked by a revival of the native monochrome tradition till we reach level II contemporary with the Egyptian Middle Kingdom and Hammurabi's dynasty at Babylon.

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This is well dated by Egyptian statues and scarabs revealing close and friendly contact with the Nile valley. But in it appear ingot torques and pins with swollen perforated necks that Schaeffer attributes to Europeans from the Danube valley. Then the troubles caused by the Hyksôs are reflected at Ras Shamra by the mutilation of the Egyptian monuments. Thereafter Ugarit was incorporated in the Egyptian New Empire and enjoyed its golden age. But in the 14th century an earthquake, mentioned in the Tell el-Amarna letters and clearly recognizable in the ruins, interrupted this era of prosperity. Subsequently Ugarit joined the Hittite confederacy, retaining its independence.

Chapter II deals with the Aegean relations of Ugarit. Part of a polychrome M.M.IIa cup, imported from Crete, and imitations of Middle Minoan vases turned up in tombs at Ras Shamra, dated by Egyptian imports to the 18th century B.C. This observation induces the excavator to re-examine the dating of the Middle Minoan vases found in Egypt with the result that he, like Åberg, favours some reduction of their dates as compared with those generally accepted in Britain. The imitation of Minoan vases suggests an actual settlement of Cretan merchants and craftsmen at Ugarit already in the 18th-17th centuries—an inference supported by the development of tombs with a short stepped *dromos* (entrance passage) under houses of the period. This infiltration would have prepared the way for a veritable colonisation towards 1400 B.C. The colonists built for themselves vaulted family tombs recalling the famous tholos tombs of Greece. But at Ugarit they were built under the houses of the living; the chambers are rectangular, not round; the vault over some chambers and the arch over some doors are completed by a T-shaped keystone, and niches or even windows have been let into the chamber walls. These and other features reveal a striking divergence from the practice of the Greek mainland; the nearest analogy to the Ugarit vaults is the Royal Tomb of Isopata in Crete. Aegean influence is also seen in the combination of masonry and timber in wall construction, to say nothing of numerous Mycenaean cult-objects and masses of imported pottery. It really looks as if Minoan or Mycenaean colonists came to form the richest element in the city's cosmopolitan population though the written language remained Semitic.

A remarkable iron battle-axe is studied in chapter III. It is reliably dated about 1400 B.C. and is in any case older than Tutankhamen's famous dagger, so that it is the oldest surviving object of terrestrial iron (since the iron blade of the early Sumerian dagger from Khafaje had been completely disintegrated by rust). A shaft-hole socket of copper had been cast onto the blade by the *cire perdue* process. The butt takes the form of a boar, while two lions' heads seem to be spitting the iron blade from their mouths, the whole being decorated by a sort of damascening in gold. On stylistic grounds the weapon, though

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possibly mounted at Ugarit, is regarded as Hurrian or Mitannian—a Hurrian element was prominent in the earlier levels at Ras Shamra. Hence Schaeffer, citing also references to iron in the letters of Tushratta, king of Mitanni, to Amenhotep III, argues that the earliest economical iron-working developed on Mitannian territory and only passed under the control of the Hittites after these had conquered Mitanni.

The last chapter describes two archaic looking statuettes—a seated goddess and a standing god—of copper, which are dated between 1900 and 1600 B.C. The author does his best for the pair, but they hardly seem beautiful from their photographs. The style is considered to be Hurrian. A comparison with Sardinian and Iberian bronzes occurs to one at once, but doubtless only owing to the crudity of the representation.

V. GORDON CHILDE.

THE GREEKS IN BACTRIA AND INDIA. By W. W. TARN. *Cambridge University Press*, 1938. pp. xxiii, 539. 30s.

The history of Greek influence in the Eastern world is a subject comparatively little studied; school text-books mostly end with the death of Alexander, and though some knowledge of the Diadochi is expected of University students, it is rare for any except specialists in Ancient History to go beyond the third century B.C. It is therefore something of a surprise to the ordinary reader to learn that Greek influence in India persisted almost to the beginning of the Christian era.

Dr Tarn's aim is to elucidate the rise, the decline and the final extinction of Greek power in the Far East, and to this undertaking he has devoted all the resources of his wide knowledge acquired in many years of exhaustive study. It is a difficult task, especially in the later stages, for the works of the first-hand authorities are almost entirely lost, and the later writers who made use of them are often untrustworthy. At a certain point Greek evidence fails completely, and the historian must fall back on the scanty information to be gathered from Indian and even Chinese sources; while for the final phase there is no evidence at all except the existence of numerous coins struck by a series of otherwise unknown kings of Greek origin.

Dr Tarn assumes in his readers at least a general knowledge of Hellenistic history, and, as a necessary preliminary for further study, he gives in the first part of the present book an introductory sketch of the Seleucid kingdom (Ch. I) and an account of the Greek literature of the Middle East and the social relations between Greeks and Orientals (Ch. II). A knowledge of this background will, he hopes 'make it easier to see the connexions between the story of the Farther East and that of the Seleucids'.

Whereas Alexander had looked further than mere conquest and domination,

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and aimed at the fusion of Greece and Persia, the Seleucids had different ideals ; they favoured the Greeks unduly, and fostered the Greek *πόλις* instead of trying to unite East and West. The story of Bactria as an independent state separated from Seleucid influence begins with Diodotus I (who was little more than a satrap of Antiochus II) and his son Diodotus II. The latter, *c.* 228 B.C., took the royal title and formed an alliance with the king of Parthia, but the most important names in the early history of the kingdom are those of Euthydemus and his son Demetrius. Euthydemus was a son of Diodotus I by a Seleucid princess, his second wife. With true Macedonian unscrupulousness he killed his half-brother, Diodotus II, and assumed the throne. We now come to a striking example of Dr Tarn's interpretation of the evidence of coins. The portrait of a certain Antimachus, to be mentioned later, shows a humorous smile of which the only other example is on a portrait coin of Euthydemus. This is a strong argument in favour of relationship, and what we know of the dates fits in with the theory that Antimachus was a son of Euthydemus and a younger brother of Demetrius. A further argument, partly based on coins, gives us the names of the four sons of Demetrius.

The detailed chronology of this period is impossible ; Euthydemus, after a hard fight, came to honourable terms with Antiochus III and was, in all probability, nominally a vassal-king, at any rate for a time. He seems to have originated a new state-form, under which a reigning monarch could appoint as his deputy a sub-king. His son Antimachus, who ruled thus as a sub-king, first under his father and then under his brother Demetrius, issued a coinage of his own with the royal title, and was not deterred by false modesty from calling himself God. Demetrius succeeded to his father's ambitions for extending the kingdom. Darius and Alexander had both conquered India, and the latter, though he did not hold it for long, had commemorated his name by many 'cities' founded in the country. Demetrius consciously imitated his supposed ancestor, for by a fictitious pedigree (*see* appendix) the Seleucids, with whom he claimed kinship, traced their descent from Alexander ; he even adopted the title *ἀνίκητος* (invincible) which was conferred on Alexander by the Pythia, but never used by any other Greek king hitherto. For a short time he held an enormous empire ; he himself conquered Sind and went down the Indus to the sea ; his able lieutenant Menander reached Pataliputra, as is proved both on Greek and Indian authority ; Apollodotus, his second general, penetrated Rajputana. His policy was to form a Graeco-Indian empire based on the partnership of the two races, and was carried on, after Demetrius' death by his able General Menander, the story of whose long conflict with Eucratidas, acting for Antiochus Epiphanes, remains obscure, the chronological evidence being supplied partly from coins. After the death of Eucratidas, Menander

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retained the kingship of India, while Bactria, ruled for a time by a son of Eucratidas, succumbed to a nomad invasion. Of the death of Eucratidas, Dr Tarn has a new account; there are two ancient stories, one that he was killed by the Parthians, the other that he was murdered by his son. Dr Tarn rejects both of these, but believes that the latter contains the truth, disguised by a clerical error. A name has dropped out after 'son', and Eucratidas was killed not by his own son but a son of somebody else, probably Demetrius.

Here, as in the case of many events of this period conjecture plays a large part, and after the death of Menander literary evidence fails altogether. Thus the last period is the most difficult of all to reconstruct. We have the names of thirty-six kings and one queen, but there is no means of establishing their relationship except by the elusive evidence of coins.

In dealing with these late dynasties Dr Tarn maintains his opinion that the monograms on their coins are not the marks of mint-cities, as is generally believed, but represent the names of mint-masters, according to Seleucid custom, or possibly city-magistrates. Either interpretation is likely in the present case to lead to contradictions and difficulties, and, failing further archaeological evidence, it is unlikely that the history of this period can be satisfactorily established.

To conclude, our author has made a discriminating use of all possible authorities—Greek, Indian, and even Chinese literary sources, in addition to coinage. The difficulties in the way of a systematic archaeological survey have, for political and other reasons, so far been insurmountable. The result, though many details must still be subjects of controversy, is a consistent narrative of a complicated period of history, a contribution of great value to our knowledge of the Hellenistic East. It would be easier to follow the sequence if we were provided with a chronological table of the reigns and the dates of the principal events. A further help would be the insertion in the maps of lines to show the boundaries of the Bactrian empire at various stages. The general index, which is full and accurate, is helpful in these matters; but it would be useful to be able to see the results at a glance.

J. F. DOBSON.

FAHREN UND REITEN IN ALTEUROPA UND IM ALTEN ORIENT.

By JOSEPH WIESNER. (*Der Alte Orient*, band 38, heft 2-4). Leipzig, 1939. pp. 92 and 8 plates. 5.25 marks.

Five years ago Miss Hermes published in *Anthropos* a series of important articles on the war-chariot—and cavalry as a contribution to the problem of Indo-European origins. She brilliantly showed how the swift horse-drawn car could be used as an instrument of domination and of linguistic diffusion, and at the same time brought out admirably the high technical skill presupposed in the

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construction of the engine. Starting from the high antiquity of the war-chariot in Mesopotamia as revealed by the discoveries at Ur and Kish, she sought to trace the spread of the new weapon from Asia to Europe, and subsequently to establish a similar spread of cavalry, and thus to demonstrate the Asiatic origin of the Indo-Europeans whose intimate connexion with the horse and horse-drawn car remains one of the most reliable deductions of linguistic palaeontology.

Wiesner's popular book seems really to be a reply to her articles, though her arguments are never expressly contraverted and many of her conclusions are indeed accepted. But the author lays great stress on the contrast between the west Eurasian tarpan stock from which the Indo-European steeds of Hither Asia and Greece would be descended, and the *Equus Przewalski* breed which furnished the earliest Chinese horses. He insists too on the frequency of horse-remains in the European Stone Age, often in contexts which, like the British long barrows, would seem to exclude connexion with Indo-Europeans. Hence not all horse-using peoples need be Indo-Europeans nor influenced thereby. The chariotry of the early Sumerians was neither a sign of Indo-European influence nor yet a Mesopotamian invention; it was borrowed by the Sumerians from unidentified mountaineers to the north from whom also the horse may have reached the Indus civilization. Conversely the first expansion of the Indo-Europeans,—battle-axe folk from northern Europe—was not in chariots though horses may have drawn their wagons. It would only be in the last stage of this expansion when the Aryans (Indo-Iranians) were breaking away from the rest that the light chariot was adopted by some of our linguistic ancestors. Direct connexion between the heavy chariots used by spearmen in the third millennium, and the light cars of the second millennium bowmen is denied; but the reader may, if he wish, infer that the Indo-Europeans and the Shangs of China borrowed the improved device from the same source as the Sumerians a thousand years earlier.

In any case 'the Indo-European chariot-fighting tribes are not sprung from nomad riders, but from a culture in which beasts drew wagon and plough—a peasant culture' (in harmony with official German ideology); 'for all their wide roaming they exhibited a sedentary character which enabled them to play a constructive role in history'. It was from the East European plain that the new war engine was brought to Scandinavia (where it is represented on the Middle Bronze Age cist at Kivik, Scania) to Mycenaean Greece, and, with the Aryan rulers of Mitanni, to Hither Asia. From the latter (not from the Hyksôs) it was adopted by the Egyptians, Phoenicians, Babylonians and Assyrians, presumably as the horse was taken over by the Plains Indians from the Spanish Conquistadores. In Central Europe the war-chariot would have spread more

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slowly ; Wiesner cannot decide whether the Celts received their introduction to it from the north or from the east through the Thracians. Miss Hermes had suggested that the La Tène chariots are inspired by Etruscan models, but this idea is not even considered.

Cavalry riding together with cremation reflected to Miss Hermes the second wave of Indo-European expansion from Asia. Our author does admit that the idea reached our Continent from Asia, but not as a result of an invasion by riders. (Gallus and Horvath, *Un Peuple cavalier préscythique en Hongrie*, have recently argued from a comparison between Hungarian, Caucasian and Siberian bits for a spread of mounted knights eastward from the middle Danube plain). ' It must be regarded as certainly established that cremation is a rite unsuited to horsemen who always lay stress on conservation of the body ' (no evidence cited). On the other hand trousers and slashing swords are proper to riders and mark peoples who have given up chariot-riding for horse-back fighting.

The detailed argumentation of the above theses, supported by small but good photographs of the most relevant representations and of bits, is moderate and reasonable. No illegitimate use is made of the allegedly neolithic bridle-cheek-piece from Halberstadt, nor of other finds of dubious antiquity. The famous Egyptian chariot preserved at Florence is not hailed as ' Nordic ' because birch-bast was used in its construction. We may be surprised to learn that ' the most imposing monument of the northern chariot nobility is the Cursus (*Rennbahn*) of Stonehenge. But its dating to the second millennium is not yet certain '. In any case the author's insistence on the careful training required for war-horses that were to draw chariots, and the practical utility of racing to that end, as well as on the connexion with funerary cult, is useful. But the whole thesis fits official dogmas so neatly and refutes Miss Hermes' heresies so plausibly that it seems too good to be true. Incidentally the accepted doctrine of the Asiatic character of the composite bow has to be jettisoned since that is the weapon of the earliest Indo-European charioteers both in Greece and in Hither Asia.

V. GORDON CHILDE.

ZUR URGESCHICHTE DER KELTEN UND ILLYRIER. By JULIUS POKORNY. Halle (Saale), 1938, Max Niemeyer Verlag. Price (abroad) 9 marks.

There are two aspects to this book. First, a sketch of the cultural history of Central and Western Europe on an archaeological basis from Neolithic times to the La Tène period ; and second, an attempt to equate the various cultures as far as possible with linguistic evidence. The primary interest throughout centres on the Urnfield people. For the former, Pokorny has taken the trouble

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to acquaint himself fully with modern archaeological research ; more than can be said for most Celticists who have dealt with questions of cultures and races. For the rest, Pokorny is a man with a strongly developed scientific instinct for imposing the order of theory on the chaos of fact ; a philologist and Celticist of great repute, he is well-known among his colleagues for the boldness of his hypotheses. Here therefore one must caution those archaeologists who may be unfamiliar with philological methods, and may be inclined to take Pokorny's etymologies on trust, since his presentation makes them seem simpler and more authoritative than they are.

Pokorny has been struck by the importance in European prehistory of the wide expansion of the Urnfield peoples from their Lausitz homelands. It is clear that they must have been an Indo-European people, and yet neither Celtic nor Italic nor Germanic nor Balto-Slavic, to use linguistic terms. What was their language, how can it be reconstructed, and what influence did it have on neighbouring languages and on the toponymy of Europe ? Pokorny's answer to the first question is that it was Illyrian, on the ground that the historical Illyrians were the most direct descendants of the Urnfield people speaking an Indo-European language other than those excluded. The Illyrian language he believes can be recovered as follows : first, from such meagre remaining words and names of the Illyrian, Venetic, and allied Balkan peoples as are found in Classical sources, as well as from modern Albanian, a small proportion of whose vocabulary is probably descended from the Illyrian ; and second, from place-names in any part of the wide Urnfield expansion areas which are Indo-European but not Celtic, Italic, Germanic, or Balto-Slavic. Here again a warning is needed. Identification of languages with cultures in pre- and proto-historic times is rarely simple and is often highly dangerous. In some cases there is enough converging evidence to give certainty ; thus there is no possible doubt that the La Tène peoples of Gaul and Britain spoke Celtic. But when it comes to reconstructing the phonetics and morphology of an almost unknown language chiefly from place-names, many of them modern, and equating it with a little-known culture, it is another matter. The frequent practice of drawing conclusions about a whole culture or people from one or two doubtful names (as a random example, the Picts), is a very risky one. Pokorny himself points out honestly some of the difficulties of his methods. He rightly states that the absence of some word in the modern Celtic languages is no proof that it is non-Celtic ; but he then acts as if it were. He allows that a name found in various parts of the Urnfield area need not necessarily be Illyrian, but may be due to some older common substrate ; he rarely considers this however, and would rather invent more or less unconvincing Indo-European etymologies than admit that a given name may be non-Indo-European.

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Pokorny gives what sketch he can of Illyrian phonetics. If he is right, it is very like Celtic in many ways, but there are certain points of difference. The most important are : preservation of Indo-European *p*, lost in Celtic, and *q*, changed to *p* in all but the Goidelic branch of Celtic ; and of *p . . . q* (as in *penque*), assimilated to *q . . . q* in Celtic and Italic (Latin *quinque*) ; Indo-European *ei* becomes *î* in Illyrian, and *gu* becomes *g*, but in Celtic respectively *ē* and *b*. In some instances one can definitely say on these lines that a word is not Celtic and may be ' Illyrian ' ; for example *Porcobera*, ' Salmon bearing ' (river name in Liguria), where Celtic would be **Orcobera*. But quite often Pokorny's reason for denying a name to Celtic and giving it to Illyrian is not phonetic, and is then much less satisfactory. Thus it is an important part of his theories that the Indo-European element in the ' Ligurian ' area of southwest France was Illyrian, and therefore that any Indo-European names there must be Illyrian, not Ligurian ; nor yet Celtic, apparently, no matter how Celtic they look. This of course ignores the fact that by later La Tène times Liguria, not to mention many other parts of Europe formerly more fully occupied by the Urnfield peoples, must have been largely Celtic-speaking. Why should a name in the former Urnfield area, later overrun by La Tène Celts or overlaid by their culture, be divorced from the known Celtic and called the unknown Illyrian, if it can perfectly well be Celtic ? For example, the name *Argentios* in the department of Var is called Ligurian, i.e. Illyrian (' Latinized ' from *Argentios*) ; but the burden of proof is on Pokorny to show why it is not Latinized Gaulish, a much more natural assumption, as phonetically it can just as well be. Numerous other instances could be quoted. Apropos of Teutomelius, king of the south French Saluvii, he speaks of the ' Illyrian ' names *Teuta*, *Teutos*, *Teuticos*. This seems wilful ; what is better authenticated, with descendants in all the modern branches, than the Celtic (and Italic) base **teut-*, ' people, nation ' ? To speak of the first part of *Bormitomagus* (Worms) as a ' good Illyrian name ', without noting that the second element at least is a well-known Celtic word, is almost equally perverse.

The above criticisms are by way of a caution to those who are not versed in philology ; there is much more hypothesis present than might be suspected. But this is not to minimize the value of Pokorny's work. There is no doubt he ' has something '. The Urnfield people must have spoken a language, doubtless Indo-European, and it is quite legitimate to ask what it was, and what influence it had on better-known languages and European place-names in its widespread distribution. When all is said, there is a residue in Pokorny's examples which does seem to deserve serious attention. At present his is a theory to be borne in mind, rather than an established fact to be accepted.

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There is a great deal of matter in this book, and a review can only touch certain sides of it. The questions of 'Illyrian' nomenclature in Spain, France, Germany, etc. are an important section. English archaeologists will be particularly interested in the British aspects. Pokorny holds that the Late Bronze Age influx was not due to Goidelic-speaking Celts, as has frequently been thought, but to Illyrians; which however involves believing that the Urnfield population element among the immigrants was far more important than that of the Tumulus people, which is doubtful (*cf.* Mahr., *Proc. Prehistoric Society*, 1937, pp. 389 ff., particularly p. 397). This view opens the way to much theorizing about Illyrian place-names in the British Isles, interesting and ingenious but not always too convincing. The name *Albion* is declared to be Illyrian or even pre-Illyrian, partly on the ground that it is not found in Brythonic; Pokorny is unaware apparently of the Welsh *elfydd* 'world, land', from British **albio-* (see *Bull. Board of Celtic Studies*, vi, 134). According to him, the bringers of the Iron Age A culture were Q-Celtic Goidels, not P-Celts as is usually supposed. This involves separating *Pretani* from the Celtic stem **grit-*, and some doubtful etymologizing to make an Illyrian word of it. The first P-Celts in Britain would therefore be the Iron Age B people. Illyrians are unearthed of course in Ireland as well, and here the evidence is even less certain; some timely strictures on some of Macalister's more unfortunate Germanic etymologies are to the point, however. On the supposed early Brythonic element in Irish emphasized by O'Rahilly, Pokorny attributes this to the Iron Age B peoples, evidently the *last* important Celtic infiltration into Ireland. The attribution is clearly correct, unless indeed it is all a matter of late Welsh borrowing, as many still think. The fact that the Gaelic overlords of early historical Ireland seem a fairly new thing, having subjected populations who were at least in part Brythonic or non-Celtic, was thought by O'Rahilly to mean that the Brythonic Celts (including *Belgae*) came to Ireland *before* the Goidels, an archaeological paradox of course. Pokorny hints at, but does not seem to develop, a much more simple explanation, namely that the new Gaelic ruling peoples and dynasties of the Christian era represent merely an upsurge of an older Celtic population subduing the remnants of the light Iron Age B infiltration. So bemused are we all by the old idea that every new governing people must necessarily represent a new invasion of foreign conquerors, that no one seems to have thought of this before.

In spite of doubtful etymologies, one must confess that in dealing with Britain, as before, Pokorny has something. There *are* pre-Saxon place-names in Britain which cannot easily be explained as Celtic. Such are *Mons Graupius*, *Rutupiae*, *Corstopitum*, *Venta*, to name only these; and one must consider

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whether they may not be due to some non-Celtic constituent in the Late Bronze Age and First Iron Age immigrants, and whether that may not consist of Urnfield elements unassimilated to the proto-Celtic Tumulus people, especially if convincing parallels in the Urnfield area can be demonstrated. Pokorny's stimulating theory would have been more impressive if he could have restrained himself from overdoing the case, and had limited himself to a nucleus of really persuasive etymologies.

KENNETH JACKSON.

ZUR URGESCHICHTE DER KELTEN UND ILLYRIER. By JULIUS POKORNY (reprinted from *Zeitschrift für keltische Philologie*, xx (1936), pp. 315-352, 489-522 and xxi (1938), 55-166, with annex, *Die Urnenfelderkultur und ihre Bedeutung für die europäische Geschichte*, by R. PITTIONI (ibid. pp. 167-204).

Though hardly a scrap of literature survives, something, it is claimed, can be reconstituted of the Illyrian language from place-names (those like Hallstatt and Halle containing the Illyrian word for salt are the best known). The Illyrians who spoke this language seem to classical scholars barbarian tribes scattered on the margins of Ancient History. But the distribution of the place-names, if these be correctly attributed to them, would imply that the Illyrians had once been as domineering and ubiquitous as the Celts of the third and second centuries B.C. Kossinna long ago suggested that Illyrians were authors of the Lausitz culture. To rescue the latter from Slavonic claimants the thesis has been enthusiastically espoused by Austrian and German prehistorians and patriotically developed since 1920. It is now universally asserted in the Third Reich that not only the Lausitz culture itself, but also the urnfield cultures of Bohemia, Austria and western Germany, in which Lausitz influence can be detected, are monuments of the Illyrians. The former Professor of Celtic in Berlin here illustrates the thesis by juxtaposing a map of Illyrian place-names in Central Europe to the map of Urnfield cultures published in my *Danube in Prehistory*. The distributions agree quite well.

But Pokorny is not unaware that archaeologists have recognized at least the influence of urnfield cultures also in the Celtic west. So, encouraged by the name of the Veneti in Brittany, he asks whether there be not traces of Illyrians in West European toponymy too. Here in the west Pokorny thinks himself entitled to claim as Illyrian all linguistic monuments on Celtic territory that, while unambiguously Indo-European, cannot be explained as Celtic, and that recur either on original Illyrian soil from Poland through the Sudeten lands, Hungary and the Balkans to Albania, or in later Illyrian colonial domains in Austria, Switzerland, Italy and Greece, as also in the kindred Thracian province. Moreover, he adds, 'in view of the close linguistic relations between Illyrian

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and Balto-Slavonic, I have treated Celtic agreements with Balto-Slavonic as evidence of an Illyrian origin'. Copious traces of Illyrians are thus detected.

The reviewer is not competent to pronounce either on the propriety of the methods or on the validity of the individual philological arguments, but thinks it worth while to summarize for English readers the conclusions of this distinguished foreign scholar in so far as they affect British prehistory. For Pokorný finds a number of Illyrian names in the British Isles—principally rivers, including the Severn, Tay, Thames and Farar, but also tribal appellations, the Lugi in Sutherland, the Epidii in Kintyre and our old friends the Picts as well as the oldest recorded name of Britain, Pretanikai Nesoi. Such must, he suggests, have been introduced by Urnfield invaders—in the first place the authors of our Deverel-Rimbury cultures, but also by the Late Bronze Age invaders symbolized by leaf-shaped swords and the other novelties in metal-work to which Mr O. G. S. Crawford first drew attention. Even in Ireland the repercussions of this invasion are reflected in such names as Shannon.

The identification of the Late Bronze Age invaders as Illyrians, obliges Pokorný to propose a fresh solution to the problem of the Goidels, but this he can find only after examining the linguistic and archaeological data from the Iberian Peninsula. There too he finds Illyrian names. Their introduction our author attributes to those urnfield invaders from the Rhone whom Bosch-Gimpera and Kraft (*ANTIQUITY*, 1929, III, 36) took for Celts. Two subsequent layers of invaders can, however, be recognized and accepted as Celtic by Pokorný. The latest (La Tène) layer would of course be Brythonic, but that represented by the late Hallstatt cremations with horse-shoe swords and Jogassian-looking brooches is claimed to be connected with such obviously Goidelic tribes as Querquerni. Now, as their pottery and brooches are admittedly related to the Jogassian—the contrast in burial practices is ignored—and as All Cannings Cross too is related to Jogassian, it follows that Iron Age A in England is also Goidelic. The linguistic memorials of this invasion would be names like 'Ορκάς (Orkney) and Κάντιον (Kent), supposedly dating back to the time of Pytheas. Pokorný even inclines to connect the Celticization of Ireland with an extension thither of the Hallstatt culture from England. But he admits the possibility that Ireland received its Goidelic population not only through Britain but also direct from Spain; 'for immigrations from North Spain to Cornwall directly or through Brittany in VI–IV B.C. are today accepted as certain by most English prehistorians' (!)

A natural corollary is that Brythonic reached the British Isles first with Iron Age B—with the Yorkshire charioteers, Hawkes' Marnian raiders, and the multiple waves who left at last the Southwestern B culture.

What philologists will say to this scheme remains to be seen; it is for

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instance notorious that *Kantion* has been explained as Brythonic. From the archaeological standpoint the reconstruction here offered us by a German philologist whose knowledge of British relics must have been based mainly on literature, is to say the least intensely stimulating. But since it was composed, the rapid progress of prehistoric research has reduced its plausibility. Recent excavation has emphasized still further the profound impression left by the Iron Age A people on traditions of rural economy, military architecture, and textile equipment as well as potting in Britain, and the absence from Ireland of the relevant farm-buildings, methods of fortification and weaving appliances. The reviewer is accordingly struck by the disproportion between the traces of Goidelic speech in English toponymy and the influence exerted by the Iron Age A population on English culture and in the opposite sense by the virtual absence of Iron Age A from the classic land of Goidelic speech.

Perhaps too the treatment of the 'Urnfield people' as the archaeological equivalent of the linguist's Illyrians should not pass unchallenged. By Pokorny the term is used primarily of the Lausitz population, then of those Austrian, Swiss and west German practitioners of urnfield burial who are generally supposed to have been led or stimulated by Lausitz colonists. While a Lausitz colonization of the lowlands of the southwest is really probable, it might still be questioned whether it were on a scale sufficient to affect the established speech. In any case Lausitz influence is more conspicuous in north Germany and Denmark than in the Tyrol or Bavaria. Pittioni brings out this fact very clearly in his appendix to Pokorny's article. The area in question being the heart of the Germanic province, it would of course have been a dangerous heresy to interpret the Lausitz forms here as evidences of an Illyrian invasion.

Then there are urnfield cultures in Hungary, generally assigned to the Middle Bronze Age (Toszeg C). They are not mentioned by Pokorny or Pittioni, though the latter speaks of the 'Urnfield influences' (meaning Lausitz influence) on the Late Bronze Age urnfields of Hungary and traces it to the Balkans and Macedonia, where it might be plausibly connected with Illyrians. But how are the older urnfields related to Lausitz and to the north Alpine-Rhenish series? Again the cemeteries attached to the Italian *terremare* are in fact urnfields; indeed Pittioni accepts Leopold's thesis that their pottery is inspired by Lausitz traditions. So he rejects the once seemingly established identification of *terramaricoli* with Italic, ancestors of the Romans, and takes them for proto-Illyrians (*frühillyrisch*), and Pokorny himself agrees that the Italic languages became differentiated in Italy and were not introduced ready made. In fact to an archaeologist the Illyrian hypothesis seems to rest on rather speculative premises and, in view of the paucity of authentic linguistic documents, to lend itself to circular arguments.

V. GORDON CHILDE.

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GERASA : CITY OF THE DECAPOLIS. An account embodying the record of a joint excavation conducted by Yale University and the British School of Archaeology in Jerusalem (1928-30), and Yale University and the American Schools of Oriental Research (1930-1, 1933-4). *Edited by* CARL H. KRAELING. pp. XXXII, 616 with 143 plates and 47 plans. *New Haven, Connecticut : American Schools of Oriental Research, 1938. 10 dollars.*

The visible remains of Gerasa, known and discussed for more than a century, have long demanded a systematic publication based on the excavation of selected sites within the city. This was made possible through the collaboration of the Department of Antiquities of Transjordan with the learned Institutions responsible for the work carried out between 1928 and 1934. The report falls into two parts. The exploration of the classical city was limited to 'minor tasks . . . chosen with care and circumspection and . . . carried out systematically and thoroughly'. But 'the investigation of Christian Gerasa, particularly of her numerous churches . . . must be regarded as completed'. As will be seen the latter claim requires one qualification.

The origin of the city is uncertain but the name Gerasa, which is apparently Semitic, suggests a pre-Seleucid settlement, as it is older than the alternative, Antioch on the Chrysorhoas. A suggested Hellenistic foundation by Perdiccas rests on no sure basis and Professor Kraeling would prefer to connect the city with Antiochus IV. To this period he would ascribe the origin of the temple of Zeus, which is aligned not with the Roman city but with an earlier layout centred on 'Camp Hill'. Only scattered finds bear witness to these early days, and the new phase opened by Pompey's reorganization of 63 B.C., from which the city's era dates, is that revealed by the excavations. The first century A.D. was an age of prosperity and expansion. Inscriptions of 22-3 and 42-3 show that the Temple of Zeus was then in course of reconstruction. An ambitious city plan with colonnaded streets was adopted and fortifications incorporating the earlier temenos of Zeus were built. It is possible that these should be dated by an inscription of 66-7, but a certain *terminus ante quem* is given by the completion of the northwest gate in 75-6. The peace with Parthia, the expansion of Nabatean commerce and the deflection of trade due to the troubles in Palestine seem all to have contributed to this prosperity. The Roman annexation of 105 and the prolonged visit of Hadrian in 129-30 seemed to promise an even brighter future. A triumphal arch dedicated in the latter year and lying 460 metres south of the wall was designed as a gate in a projected extension of the city, a project which included the rebuilding of the gates. The main streets were widened and the original Ionic colonnades replaced with the Corinthian order about the middle of the century, and the existing

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remains of the great temples of Zeus and Artemis were erected in the same generation. But the great extension was never completed, and although the late 2nd and 3rd centuries can show ornate public buildings like the Nymphaeum (191) and the 'plaza' round the South Tetrapylon (293-305), the period was essentially one of decline which continued until the Renaissance of Christian Gerasa in the 5th century.

The historical conclusions outlined in the preceding paragraph are based upon the excavation of several of the buildings mentioned. Though the great Temple of Zeus could not be examined its historical development can be inferred from inscriptions and from the 'Forum' leading up to the temenos. Accurate plans, and in many cases reconstructed drawings, illustrate the architecture of a provincial Roman city near the eastern frontier of the Empire, and a corpus of all the known inscriptions sheds light on many aspects of the city's life. Particular interest attaches to Temple c, erected about 150 near the centre of the city in an area previously part of the cemetery. Location and plan suggest a Heroön which is compared to the earlier example at Kalydon, and it is noted that access to the crypt continued when the superstructure was ruined by an earthquake about 250. A part of the Hippodrome, the Theatre at Birketein outside the walls and a small section of the necropolis were also explored, and chapters dealing with the coins and the glass are included.

The exploration of the eleven churches is admirably described by Mr J. W. Crowfoot. Nine are basilicas, one cruciform and one circular, each of the last two set within a square and with a projecting apse. The earliest is the cathedral with a spacious atrium where the miracle of the water turned into wine was annually re-enacted on the Feast of the Epiphany. This building, the centre of Christian Gerasa, is ascribed on technical grounds to *c.* 365. The majority, which are dated by building inscriptions or mosaics contemporary with their foundation, belong to the end of the 5th or the first half of the 6th century. The latest, the Church of Bishop Genesius, was erected in 611, a few years before the conquest by the Moslems, under whose rule the Christian community gradually decayed, a process reflected in the gradual collapse of the churches and the appropriation of the subordinate structures to secular uses. The report confesses that nothing is known of the origins of Christianity in Gerasa before 359, and there is no record of any attempt to explore the lower strata for remains that might go back beyond the Peace of the Church. With this exception we are given a comprehensive picture of the architectural history of the Church in this city, a picture which enables us to amplify and correct our conception of the development in Syria.

The first results to be considered relate to the planning. The preponderance of the basilica was to be expected but the demonstration that many of the

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buildings were preceded by spacious atria runs contrary to the received opinion about Syrian churches. Later encroachment and insufficient exploration supply adequate reasons for the non-recognition of this feature on other sites. The differences in the planning of the Chancel are brought into relation with developments in ritual which resulted in the adoption of a plan designed for the celebration of a liturgy with the Little and Great Entrances as in modern orthodox churches. This arrangement appears only in the latest building (611, but see below), a date in accord with the adoption of this rite under Justin II (565-76). Connected with this development is the suggestion that the small chapel, with doors both to the Church and the atrium, is the Diakonikon referred to in several texts. This was a special building 'used for the inspection of the Eucharistic offerings'. It belongs to a ritual in use before the liturgy of the 'Entrances', though its function would not necessarily cease with the introduction of that liturgy. Similar chapels are known in other Syrian churches but they are not as common as would be expected if they were really designed for so necessary a function (cf. the Syriac testamentum on p. 175). Nor is the evidence from Gerasa entirely consistent with this theory, for the chapel was only added to the cathedral at a late date (probably the second quarter of the 6th century) and it continues to be included in the plan of the Church of Bishop Genesius, a not particularly rich or elaborate building, which is stated to be designed for the liturgy of the 'Entrances'. Technically the workmanship is distinguished by the extensive employment of re-used material and by a sparing use of ornament other than mosaic. This last factor cannot be fully estimated, for only the pavements remain, and the decoration of the walls and domes which is known to have existed is no longer available. To a lesser extent the same is true of the architectural superstructure, though here the evidence is sufficient to provide restored sections of the three more important churches. One caution is necessary in using these plans. The convention adopted requires the isolation of buildings irrespective of date and not of masonry of different periods (cf. p. 241, note 19). The plan of the church of Bishop Genesius (pl. xxviii) which suggests an architectural transept (cf. p. 182) does not entirely bear out the text (p. 250) which ascribes the piers to a columned iconostasis.

C. A. RALEGH RADFORD.

DANMARKS OLDTID. By JOHANNES BRØNSTED. *Copenhagen: Gyldendal.* Vol. I, part 2, 3000 to 800 B.C.; vol. II, 800 to 400 B.C. (Review-analysis by D. Randall-MacIver; the first part was printed in the March (1940) number, pp. 88-91).

Part 2, chapter 1, 3000 to 2500 B.C. As seen in our perspective view the change from Old to New Stone Age may seem abrupt, but this is due to mistaken foreshortening. In Denmark the three old types of population, Ertebølle,

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Gudena, Maglemose, continued their life of collecting and hunting, using implements which though improved were not wholly transformed. Thus the sharp-necked, two-sided, flint axe from Ertebolle sites of this time (fig. 76) is an evolution but not a new invention, and does not even drive out rougher forms. But it is significant that it soon develops into the highly perfected polished axe with the thin butt (figs. 84, 85). The felling of forests demanded a perfect instrument. A grave and a settlement site yield well dated pottery (figs. 78, 79), primitive, but with string-ornamentation. A peat-moss gives a wooden axe shaft associated with pottery (fig. 81). Most important of all some of the polished casts of grain, viz., Einkorn, Emmer, six-rowed barley. These are not indigenous but must have been introduced. Analysis of the various evidence does not suggest invasion but rather the gradual infiltration of a farmer people from south or southeast. There is no clear evidence of the use of domesticated animals in this first period.

Chapter 2, 2500-2300 B.C. Agriculture being now dominant settled dwellings will be the rule. A house has been found at Straadegaard in Zealand, and an entire little hamlet at Barkaer in Jutland (figs. 87-91). These houses were furnished, built of thick mud walls on stone bases. In them were found flint implements, pottery and bones of domesticated animals, viz., dog, ox, sheep, swine. Seven habitation-sites of this time are known (fig. 96). Society has apparently advanced to the stage of an organised religion, for deposits found in peat-mosses are interpreted as offerings to Gods; these include fine axes and amber ornaments (figs. 94, 95).

Among the stone objects used by the farmers the battle-axe now appears for the first time. Its form (figs. 100 a and b) betrays that it is copied from a metal original. Even more conclusive as to a trade with central and southern Europe is the group of flat copper axes and triangular dagger from Bygholm (fig. 101).

Pottery has suddenly developed into new forms (fig. 102). Some bone implements from Brabrand near Aarhus (figs. 116-117) witness to the local survival of older industries. Dolmen-graves begin to appear. These will be best discussed in connexion with the next chapter.

Chapter 3, 2300-2000 B.C. The reviewer must here remark that the word *Dysse* (pl. *Dysser*) has a wider connotation in this volume than the English 'Dolmen' by which it is often translated. 'Dolmens' in the English sense are common in Denmark, but they are regarded as the surviving central chamber (properly *Dyssekammer*) of an originally more complex whole. For normally this chamber was surrounded by a ring of large stones and buried under an earthen mound.

If it contained only one chamber the *Dysse* was circular, if it contained more than one it was oblong (cf. figs. 112 and 143 with figs. 145, 146; see also 200

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and 201). Various types of the central chamber are shown (figs. 110, 111, 114 ; see also 141, 142).

The majority of Dysser may be attributed to the period of this chapter. Dating is difficult but on the evidence of grave-goods, 57 examples are carried back to the time of chapter 2, thus making an earlier dolmen-period. In chapter 3 the further development of megaliths is seen in 'Giants Chambers', *Jaettetues*, illustrated by figs. 148, 149 which show the intact barrow as well as its passage-grave (details in figs. 151-157). It is well remarked that wood was evidently used to supplement stone in these structures.

Dwelling-settlements of the time are mapped in fig. 118 ; a type of house with pillars is noted at Troldebjerg. The more usual implements from dwellings are figured in 120-128, while fig. 140 shows a votive hoard of flint-axes. The pottery, strongly influenced by Danubian types, is shown in figs. 129-132.

The peaceful development of the farmers and of the surviving hunting peoples was suddenly interrupted by an invasion, the first wholesale irruption of a foreign people into Denmark. The evidence for this is given by the famous 'single-graves' of Jutland. These graves are found in and under very low mounds, only one metre high, except when added to in later times. There are three or four distinct levels, not always found in combination, distinguished as 'underground', 'surface', 'above-ground', and 'top' graves. The contents of the several levels are generically the same; they belong to an identical people at different stages. Examples of 'underground graves' are shown in figs. 163-7 and of 'surface graves' in 178, 179. The distinguishing feature in all is the presence of a wholly new type of battle-axe (figs. 169-72 and 180) made of hard stones such as greenstone, porphyry, and granite. This battle-axe is the peculiar weapon of the 'string-pottery' tribes, so that the invaders must be identified with one or other of their groups, known at this time to have been in central Germany, Poland, central Russia, and southwest Russia. Their path can be traced through Schleswig-Holstein. Evidently they met with such strong resistance in Zealand that in this period they could only establish themselves in Jutland (fig. 184).

Chapter 4, 2000-1800 B.C. The Battle-Axe folk had made their settlements chiefly at the expense of the original hunting tribes so that in the opening of this period the farmers retained most of their territory intact. It was the farmers who built the 'Giants Chambers', they are the *Jaettetues* folk, distributed as in fig. 199. This is the finest time of their megalithic building (figs. 202-9). Their principal village-settlements are mapped in fig. 189 ; from the rubbish-heaps of these sites came the pottery and implements of figs. 192-8. Among these should be especially noted the thick-butted flint-axes and the imported objects of gold and copper.

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Contemporary with the farmers, but at first confined to Jutland, are the newly arrived Battle-Axe folk, now at the second stage of their culture, which is represented by the second series of surface graves and particularly by the 'above-ground graves' (Overgrav). Characteristic of this stage are a more evolved type of axe (fig. 215-7) and a new kind of pottery (figs. 218, 219). Dwelling-places have not been found. A distribution-map (fig. 224) shows virtually all Jutland to be in the conqueror's hands. In the course of 200 years, moreover, two more movements take place, which reinforce the Battle-Axe peoples from kindred tribes. One comes from Holstein and penetrates beyond Jutland to Zealand and the isles (figs. 225, 230); the other from Pommern-Brandenburg (evidenced by small stone cists, fig. 232), overran the isles and reaches Jutland from a fresh quarter. By the close of the period therefore the Jaettstues folk are sore beset from all sides.

Chapter 5, from 1800-1500 B.C. From one point of view this chapter might be considered almost an introduction to the second volume, yet for formal reasons it is the conclusion of the first, for in Denmark the Late Stone Age does not end till 1500 B.C. But this latest phase of it is really a 'disguised Bronze Age', though poverty of raw materials in metal compels a continuance of the use of flint in new and rather inappropriate shapes.

A notable trait is the variety of burial-forms, most clearly seen in Jutland. The favourite type is interment in the upper stratum of some mound of an earlier age, a fact which strongly suggests continued occupation of identical sites. Indeed differences of date are proved only by the changed character of grave-goods and by the novel use of a layer or a low cairn of small stones within the mound (figs. 236-8). A second fairly popular type is the large cist (figs. 233-4); small cists are rare, and probably of different origin. A third type is the 'secondary' interment in some ancient megalith. In the islands, as distinct from Jutland, there are four types, viz. (1) secondary burials in old megaliths; (2) burials on the open ground under low cairns; (3) burials in open ground with no superstructure; (4) stone cists. As to cists (type fig. 246) the author denies that they can be degenerations from any sort of passage-grave. The slab-cist ('Hellekiste') is definitely the successor of the famous single-grave, and attributable to the same invading folk.

Of the objects found in graves the most important are weapons—wholly novel in character. The battle-axe has been displaced by the flint dagger, which is so universal that this is named the 'Dagger-period'. Though the author does not thus emphasize it we might safely say that the Danish flint-work is unequalled anywhere, or at any time, except by the finest products of Solutreans and pre-dynastic Egyptians. For sheer virtuosity study the lance in fig. 249 and the daggers in 251. The shapes of the daggers are copied from imported bronze

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originals (cf. fig. 252). Stone battle-axes, rough and degenerate, occur occasionally; also stone working axes (fig. 259), closely imitating the contemporary bronze importations (fig. 260) of which many have been found, principally in depots. A certain number of bronze axes however are native Danish. In the domain of ornament there is much variety both of material and shape. Bone, tusks and teeth, amber, bronze, gold, are all employed in ornaments (fig. 256). Pottery is poor and uninteresting. Only one dwelling-house has been found, belonging to an early stage in the period (figs. 247-8).

A general review of the archaeological evidence shows that before the close of the Stone Age, the invading people of the 'string-pottery' culture had become a ruling aristocracy employing the older inhabitants as serfs and artisans.

Vol. 2, part 1, chapter 1, 1500-1300 B.C. The two great migration movements in Europe, those of the 'string-pottery' and the 'Beaker' peoples, are over. Their repercussions in Denmark have finished. It is a time of equilibrium, a ruling aristocracy controls and exploits a conquered lower class of agriculturists and artisans. The ruling class shows great ability in developing a widespread foreign trade, based upon the Danish virtual monopoly of amber. In its beginnings the Bronze Age is scarcely distinguishable from the latest Stone Age; grave-forms and implements have changed but little (cf. figs. 1, 2). The foreign types of weapons from Bohemia and Italy are still cleverly copied in stone (cf. fig. 4 with fig. 5), but all the inherited skill of the flint-worker cannot hide the inadequacy of the material so that the introduction of bronze-casting becomes inevitable. Early efforts at casting are shown in figs. 6, 8. The gradual development of the Paalstav from the older kind of working-axe is seen in fig. 7. Battle-axes take the form of fig. 9. In fig. 10 appear examples of the best indigenous bronze-work. Bronze ornaments are illustrated in fig. 11, but note that the fine bronze drum of fig. 13 comes not from Denmark but from southern Sweden.

Chapter 2, 1300-1000 B.C. is the 'Grand Period' ('*Stortid*') during which the Danish Bronze Age attains its zenith. Grave-forms have been reduced to one only, viz. the oblong cist of stone or wood laid on the surface of the ground. Over and around the cist is piled a layer of stones (figs. 19, 20) and over this again is raised an imposing mound of earth, the base of which is outlined by one or more rings of stones (figs. 22, 24). Such mounds vary from 2 to 8 metres in height, with a diameter of 12 to 40 metres. Mounds are almost incredibly numerous in the Danish landscape (figs. 14-16 and 27-35); some are earlier and some much later than this but a very large number belong to the Bronze Age. No traces of houses or settlements have been found but their distribution may be inferred from that of the graves (fig. 36). Most of the objects illustrated come from graves but some are from hoards and offering-places

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(fig. 37). Stone cists are shown in figs. 39, 40 ; wooden cists in figs. 42, 43. For the latter the typical form is the hollowed trunk of an oak tree, to the chemical effect of which is due the marvellous preservation of men's and women's dress in several instances, illustrated in figs. 61-80. The costumes are minutely described and, like most objects in this chapter, will be very familiar. Weapons are shown in figs. 44, 49, 82 ; ornaments in figs. 50-55. Worthy of attention are the wooden vessels in fig. 56 ; the scarcity of pottery throughout Danish prehistory is probably due to a very general use of wooden receptacles. The drinking-horn (restored) in fig. 57, the folding-stool of Egyptian style in fig. 58, the Trundholm sun-carriage in fig. 59 are all famous. While foreign influences due to a far-flung trade are noticeably characteristic of the period, the author emphasizes the interesting fact that actual foreign imports are relatively few. In short the most salient and important feature of the period is the growth and development of a sturdy and independent Danish craftsmanship.

Chapter 3, 1000-800 B.C. In comparison with the 'Grand Period' these centuries seem to be a time of rather static quiet prosperity. The art of bronze-casting has now been completely mastered, its products are numerous and technically perfect, executed in the country itself. It is to be noted that the foreign technique of hand-hammering is never used, objects of beaten bronze or beaten gold are always imports. This highly developed civilization tends to become luxurious and over-refined. Weapons, no longer a necessity of life, become adjuncts of dress ; swords are now works of art, sometimes merely parade weapons. The pretty little axes of fig. 37 are a mere reminiscence of grimmer times. Similarly in dress and ornament the same tendency is visible. New fashions may be seen in the men's armlets of twisted gold, and the women's bronze necklaces, bracelets, tutuli (figs. 91, 92, 95). Note also the bronze boxes (serving as 'reticules') strung on the women's girdles (figs. 93, 94). Burial customs are unchanged, except that cremation is beginning to creep in from neighbouring countries, but it is still rare. To avoid misconception observe that Kivik and Grönhof (figs. 97, 98, 101, 102) are not in Denmark, and fig. 105 is from Sweden, though fig. 106 is Danish. The remarkable bronze cauldron on wheels (fig. 108) is undoubtedly, as stated, an import from Italy.

The general review of the Earlier Bronze Age (pp. 122-52) contains excellent remarks on rock drawings. Those in Denmark are few and unimportant, the interesting examples are in southern Sweden. Many belong to the next period but as a whole they illustrate some aspects of all Bronze Age life, notably the use of ploughs, carts, sledges, and various weapons. It has been repeatedly demonstrated that they are not narrative or epic but simply magical and religious. In fig. 141 are a number of examples which show various rites in sun-worship, particularly the carrying of the sun-disk on a carriage or on a

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ship. As confirmation of the wide diffusion of sun-worship in northern Europe these are valuable.

Vol. 2, part 2, chapter 1, 800-600 B.C. The Later Bronze Age is at once distinguished by the exclusive practice of cremation as the burial rite. Grave-goods consequently decrease in size, quantity and value, a loss which is fortunately offset by the increased number of rich votive deposits. Stages in the adaptation of the graves can be distinguished; the cist (figs. 145, 146, 152) is first much shortened and then entirely replaced by one or another small receptacle, which is generally but not always of pottery. No distinctive form of ossuary is employed, any household jug or jar will do. Sometimes enclosed in stones (figs. 148-50), it was more often buried in some part of an older mound (fig. 151). Of votive offerings the greater number were made by women; fig. 153 shows their bronze necklaces and bracelets. Foreign imports are common; obviously Italian for instance is the bronze vessel in fig. 156 (cf. also fig. 177). This bronze and the 7 foreign vessels of beaten gold with it is at least not later than 800 B.C.; two similar finds of gold are shown in fig. 157. The curious hoard of 100 little model boats of gold (fig. 159) is certainly of native origin but its date is under suspicion, the resemblance of type to the Nydam boat suggests rather that time. The five Danish swords of the 8th and 7th centuries are well-explained by figs. 162-4; other weapons and tools are given in fig. 166; razors, fibulae, pins, buttons, bone ornaments in figs. 167-71; women's bronze bracelets and reticules in figs. 172-3. The man's golden arming-ring in fig. 174 may be a token of honour. Figs. 175, 176 illustrate the famous warhorns ('Lurer'), of which no fewer than 31 have been found on Danish soil. They occur always in pairs and seem to be adapted rather for signalling than for musical performance (though I have heard three played together in a musical piece). Their potentialities however may have been under-estimated. A 'Lur' two metres long weighs about 3 kilos and is a complicated piece of mechanism; the cast bronze is only one millimetre thick, which is however too thick for the best resonance. Bronze shields are found for the first time in this period (figs. 178, 179). As no habitations are known the only pottery is that used for ossuaries in the graves (fig. 180); in these foreign influence may be detected. The biconical jar is interesting.

Chapter 2, 600-500 B.C. is the central and typical period of the Later Bronze Age; burial customs are precisely the same as in the preceding chapter (figs. 181, 183). As before it is to be noted that the ossuary is not invariably of pottery; wood was sometimes used. Figs. 185, 186 mark a digression, for though graves in the form of a ship outlined in stones occur in south Sweden, they are unknown in Denmark (except on distant Bornholm); moreover their date is uncertain. As in the last period the objects deposited with the dead are

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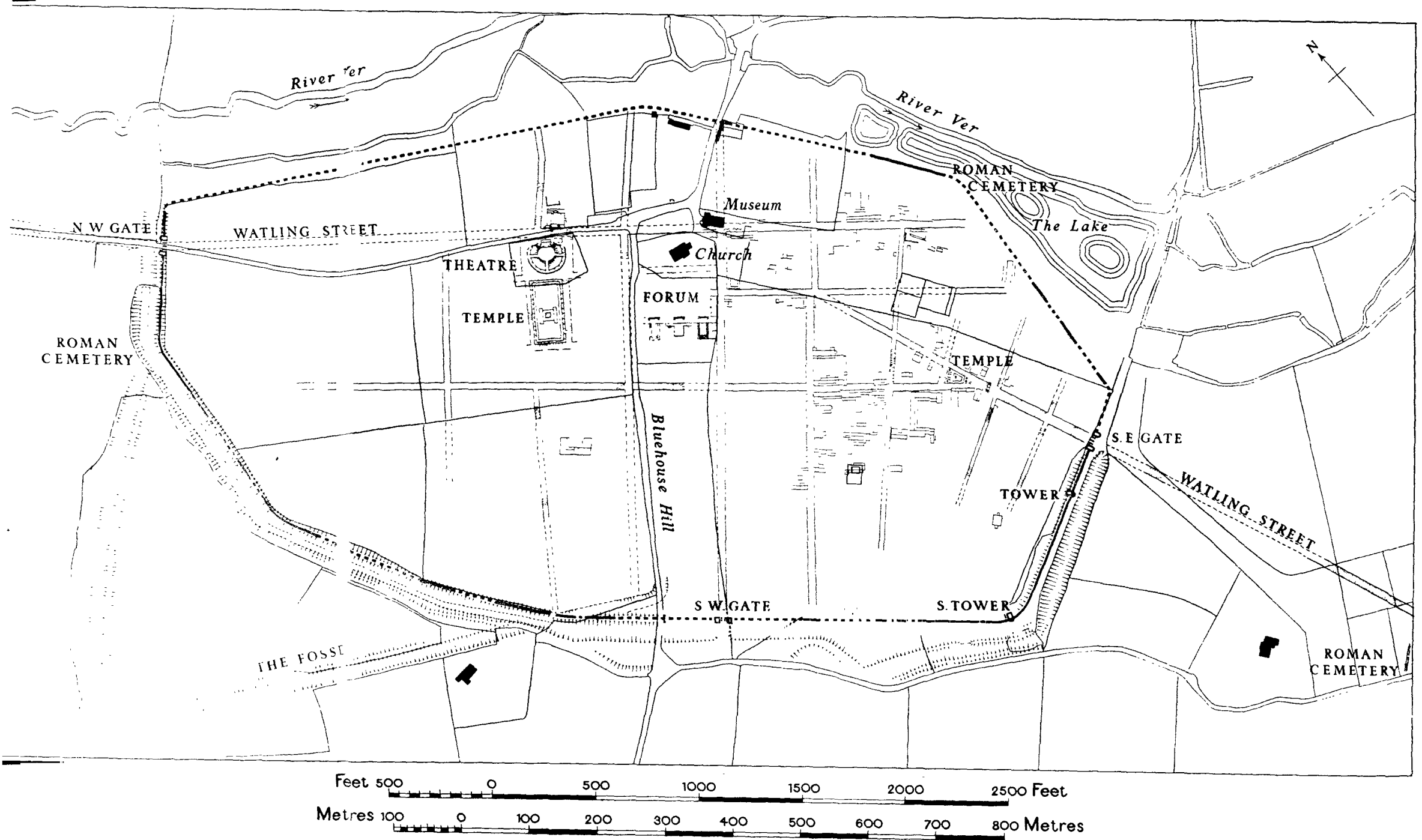
normally few, but an occasional rich grave has been found. It is votive hoards which supply almost all the important specimens for study. Fig. 187 shows an offering enclosed in a wooden receptacle which was sunk in a spring—evidently a holy well. Other votive deposits occur frequently sometimes of single objects but more often of groups; they are shown in the remaining illustrations. Fig. 196 is a distribution-map of the graves; fig. 197 of the offering-places and hoards. It may be noted that some of the swords are of Danish workmanship (figs. 198 a, b, d and 199 a), but others are importations from abroad (figs. 198 c, 199 b and c). Influences from the neighbouring Hallstatt culture are very noticeable in all the implements and ornaments, but there is a strong background of native inspiration (which is much attenuated and almost fails in the next period). The small figures of men and women in figs. 210-14 may very possibly represent deities.

Chapter 3, 500-400 B.C. A careful study of this chapter leads me to the same conclusion which I reached in the museum itself at Copenhagen. The conclusion is that the material is too scanty, as well as too confused and contradictory to allow of any simple or easy treatment. Even Dr Brøndsted finds it hard to make bricks without straw. Instead of analyzing his text I shall offer one or two remarks of my own.

Except then for the continuity of burial-custom, cremation with urn-burial, there is little to link this period with that preceding. Finds are scarce, for the habit of providing rich sets of grave-goods has almost disappeared; half of the 630 graves in Jutland are wholly without them. Most of the specimens therefore come from deposits or offering-places. They exhibit a notable variety of new forms (cf. figs. 222-32) strongly influenced by the neighbouring Hallstatt cultures. Weapons are almost absent, iron implements do not occur. The maps showing distribution will repay study; from fig. 226, for instance it appears that Jutland has the great majority of the graves. The distribution of the German necklace called 'Wendelring' is also interesting. The Elbe is evidently the chief artery of commerce but I doubt if this can justify assuming an Italian origin for face-urns (fig. 236) or hut-urns (figs. 238, 239). The dates, especially for hut-urns, are very different in Denmark and Italy. Moreover these are not typical products of Italy, where face-urns are confined to the small district of Chiusi, and hut-urns are found only in a part of Tuscany and the environs of Rome—not known as centres of export. It is wiser to connect these peculiar types of ossuary with the known equivalents in Schleswig and north Germany.

In the general review of the Later Bronze Age from p. 254 to the end are many interesting remarks which only lack of space forbids me to reproduce.

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Antiquity

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Verulamium, 1930-40

by PHILIP CORDER

ALTHOUGH by the seventeenth century Verulamium had become 'a forgotten Citie sometimes neere Saint Albones', its site has never been lost. In spite of deliberate destruction in the eleventh century—first by Saxon Abbots, who filled its 'subterranean crypts' because they had become lurking places for thieves, and later by the Normans, who quarried tens of thousands of bricks from its walls to build their new abbey on the adjoining hill—many of its buildings must have been visible as recently as two hundred years ago. Much of the West Gate was still to be seen in 1700,¹ and twenty years later Stukeley records how he encountered 'hundreds of cartloads of Roman bricks' being carried to the repair of the high road.² The work of spoliation continued during the first half of the nineteenth century, until the site of the third largest city of Roman Britain merged into the surrounding fields; nothing but the ragged remains of its overgrown walls survived here and there to indicate its site.

Some sporadic attempts at excavation were subsequently made, notably the uncovering of the Theatre by R. Grove Lowe in 1847,³ and small-scale excavations on the site of the Forum by William Page and the Reverend R. C. Bicknell between 1899 and 1902;⁴ but in 1914 a writer in the *Victoria County History* could truthfully say, 'the site

¹ *Journ. British Arch. Assoc.*, xxvi, 48 and plan.

² Stukeley, *Itinerarium Curiosum*, I, 116.

³ R. Grove Lowe, *A description of the Roman Theatre of Verulam* (1848).

⁴ *Trans. St. Albans & Herts A. & A. Soc.* (1899-1902).

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of Verulamium has not been systematically explored and so the history of the town has yet to be written'.

A new era opened, however, ten years ago, when the Corporation of St. Albans purchased 104 acres—about half the ancient City—from the Earl of Verulam and proposed to lay it out as a recreation ground. Rightly regarding themselves as custodians of the site, they initiated proposals which resulted in the formation of the Verulamium Excavation Committee. Excavations on a scale befitting a great national monument were begun in 1930, under the direction of Dr R. E. M. Wheeler and the late Mrs T. V. Wheeler, and were continued until 1934. Here for the first time the opportunity presented itself to recover the history of a major Romano-British town, unhampered by later buildings.⁵ Moreover, as we learn from Tacitus, already by A.D. 61 Verulamium had been accorded the status of *municipium*,⁶ a rank enjoyed by no other British City, and only conferred on native communities that had already achieved a degree of size, wealth and culture sufficient to warrant this grant of citizenship to their inhabitants.

The aim of the excavators was therefore clear. First, to recover as much of the plan of the southern half of the City as possible, before the area was laid out as a recreation ground, and in doing so to establish the history of the Roman City whose theatre and dilapidated defences were already known. Second, to recover both site and history of its Belgic predecessor, which coin-evidence and established tradition had fixed upon the site of Verulamium.⁷

The first aim was realized so satisfactorily in three long seasons of excavation that no urgent problem is left outstanding in connexion

⁵ Silchester, a tribal capital of half the size, was excavated in 1890–1909; Caerwent, little more than one-fifth the size, in 1899–1913; while Corbridge, the base for Hadrian's Wall, and thus hardly a typical Roman town, was in course of excavation when the Great War broke out in 1914. The earlier of these excavations produced little more than a ground-plan; but the strides made since 1914 in archaeological technique, particularly in the study of Roman pottery, provided the modern excavator with tools that had not been forged twenty years earlier. The two larger cities of London and Cirencester are largely built over, and only Wroxeter among the remaining towns of Roman Britain could compare with Verulamium in size and opportunity.

⁶ Tacitus, *Annals*, xiv, 23.

⁷ While it is not the purpose of this paper to relate the ascertained history of Verulamium—for a full report on the excavations of 1930–4 forms Report XI of the Research Committee of the Society of Antiquaries—but rather to chronicle the ten years work that led to its partial recovery, a brief chronological outline has been appended to this paper for the convenience of readers, together with a list of all papers dealing with Verulamium published since 1930.

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with what proved to be the second Roman City. Three of the gates of this City were examined, planned, and securely dated along with their accompanying defences, to the Hadrian-Antonine period (c. A.D. 130-150), as close a limit as the nature of the evidence permits in our present state of knowledge. The second objective led the excavators further afield. It was soon apparent that there was not, as earlier antiquaries had supposed, any pre-Roman occupation of the southern half of the site. A thorough examination of the Fosse earthwork, which follows in part the line of the northern defences but which includes within it some 35 acres to the west of them, proved this to belong with certainty to the third quarter of the first century, and hence to represent the framework of the first Roman City, the internal planning of which remains entirely unknown to the present day. Attention was next directed to earthworks in Prae Wood, on the plateau westward of the City, and here was discovered an abundant, if ill-defined, Belgic occupation. The study of the great mass of pottery recovered, while enabling the excavators to assign this occupation to the first century before the Roman Conquest, that is, to the age of Tasciovanus and his successor, ruled out entirely the traditional view that Verulamium was the stronghold of Cassivellaunus, stormed by Julius Caesar in 54 B.C. The investigation of Beech Bottom Dyke, a cross-country dyke on the opposite side of the valley, led them next to a great earthwork at Wheathampstead some five miles distant, where trial trenches demonstrated an earlier occupation of an *oppidum* that may tentatively be accepted as the stronghold of Cassivellaunus.

In 1934, thanks largely to the public-spirited action of the Earl of Verulam, whose estate defrayed the considerable expense of the excavation, the Roman theatre, first unearthed ninety years earlier, was scientifically examined under the direction of Miss K. M. Kenyon, and subsequently preserved. This is the most imposing of the monuments of Verulamium, and it is, moreover, the only Roman theatre that is ever likely to be seen in Britain. Two others only are at present known to have existed, the theatre at Colchester, mentioned by Tacitus, but as yet undiscovered, and one whose former existence is attested by an inscription only at the tiny capital of the Parisi at Brough on the banks of the Humber.

During the excavation of the theatre, Mr A. W. G. Lowther was examining the *insula* to the west of it, which contained a Romano-Celtic temple within a large rectangular enclosure, one of the earliest stone buildings yet known in the City. Much valuable light was

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thrown on the history of Verulamium by these two excavations near its centre. In the 11 acres examined in the southern part of the City no building was found that had been erected at a later date than the opening years of the fourth century, when the 'Constantian Renaissance' had led, as it did elsewhere in Britain, to extensive rebuilding. Throughout the fourth century, occupation there had clearly been slight and dwindling, whereas here, near the central block of administrative buildings, evidence of late occupation was abundant. The Temple had been elaborately reconstructed as late as *c.* A.D. 380, while at the same time the theatre, though no longer put to its proper use, had become a convenient rubbish-dump, the successive layers of refuse that hid stage and orchestra containing over 2,000 coins, many of the late fourth century. It may also be added that no evidence of pre-Roman occupation underlay these two great buildings.

In 1934 a halt was called to work on an extended scale, not because it was felt that the City had yielded up all its secrets, but rather to await the outcome of a proposal for cutting a 100-foot arterial road across the site that might necessitate at any moment the expenditure of a very large sum on a hurried emergency dig. It was not until 1937 that the devastating course of this proposed road was happily deflected elsewhere, and in the following year excavation of the *insula* east of the theatre was undertaken. But in the years of uncertainty after 1934 much work on a smaller scale was carried out. In 1935 the old farm of St. Germain was pulled down with a view to erecting a new museum. It lay at the east corner of the Forum at a point where Watling Street crossed the main east and west road through the City. Here the east corner of the Forum complex was exposed, the only part of it that was not buried beneath the churchyard of St. Michael's and the adjoining vicarage garden. Part of the next *insula* was also explored. In the same year an extensive cremation cemetery by the side of Watling Street on the brow of St. Stephen's Hill was investigated by Dr Norman Davey and Mr V. F. Rees. Three burning-chambers and more than one hundred burial-groups were discovered and published. In the following year a small site in the southern part of the City, east of the major excavations of 1930-3, was excavated by Mr Lowther, before the erection of a tea pavilion upon it. Meanwhile trees and bushes were being planted in connexion with the lay-out of the park, and every hole made for these was supervised for the Excavation Committee. In 1934, in the course of this work, Mr Lowther had discovered a small basilical building, bearing some resemblance to a Christian church, in the southern area

of the City, in a region where there was a significant absence of occupation. The line of a drain from the new tea pavilion towards the lake cut across a road and 2nd-century building adjoining it. These were noted by Mr F. Cottrill, but were first fully revealed by the air-photographs of 1940 (PLATE 1).

When the site of the new museum was finally chosen, it lay to the east of the area examined by Mr Lowther. As the foundations were dug, Mr J. B. Ward Perkins was able to note as much as the nature of such excavations permitted. The laying of a new road-surface west of the Museum in 1939 provided an opportunity of pushing a few yards further the excavation of the east corner of the Forum. An interesting suggestion has been raised by these last two excavations. The course of the north and west sides of the Fosse has been exactly determined by excavations ; its east side is presumed, with good reason, to coincide with the later stone defences of the 2nd-century City ; but its south side, which must perforce have been levelled and obliterated when the City was extended southwards in the Hadrian-Antonine period, eluded exact location in spite of extensive trial trenching in 1933. Mr Lowther had found the metalling of the earliest Watling Street underlying the east corner of the Forum, but it was now found that its walls some fifteen feet further west had been carried down ten feet or more into made-up ground containing early sherds, like the filling of a ditch. Mr Ward Perkins observed a similar band of deep disturbance in line with this across the middle of the site now occupied by the Verulamium Museum. It seems probable that this is the Fosse ditch, interrupted, as one would expect at this point, by the passage of the pre-existent Watling Street.

When the threat of the arterial road had been removed and archaeological considerations rather than expediency could again predominate in the choice of a site, the examination of the *insula* east of the theatre was undertaken by Miss K. M. Richardson in 1938.⁸ The ostentatious façade of this building had been exposed and planned in 1847 by Mr Grove Lowe, and again during the search for the Triumphal Arch in 1934. Both its monumental character and its situation gave promise of an important public building, and it was hoped that something might be learnt about the nature of the first Roman City, from which no pottery

⁸ A full report on this excavation is to appear in *Archaeologia*. A short summary, with plans, is printed in *Trans. St. Albans & Herts A. & A. Soc.*, 1938, and *Journ. Roman Studies*, 1939, xxix, 211-13. I am indebted to Miss Richardson for permission to read and make use of her unpublished report.

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group had yet been recovered. In particular it was hoped to determine finally whether any Belgic occupation had existed hereabouts before the construction of Watling Street, which forms the western boundary of the *insula*.

The site proved as complicated as, perhaps, only a Roman site continuously occupied for four centuries can be, and this is no place to attempt a summary of what was found. Let it be said at once that no evidence whatever came to light to suggest a Belgic occupation before the Conquest. Including the areas already excavated in this part of the valley in the central area of the first Roman City, some $3\frac{1}{2}$ acres are now known to be devoid of pre-Claudian occupation, from which fact we may now, I think, conclude that the city of Tasciovanus was, in fact, confined to the plateau of Prae Wood. Abundant traces were encountered of a considerable wooden building, having a frontage on Watling Street of at least 100 feet, but these were too scattered and fragmentary to be planned. This building came to a violent end by fire in the third quarter of the first century, and a thick layer of burnt daub and ash over the whole site has produced a valuable series of pottery of the period ending with the Boudiccan revolt of A.D. 61, in which the building probably perished. The site was later occupied by stone buildings of three successive periods, the interpretation of which provided a number of problems. The first was in all probability a public market hall, but this was later much reduced in size and in the central courtyard were erected, in the late third or early fourth century, two massive blocks of flint rubble, 8 feet deep and 10 feet apart, which must have been designed to carry a very heavy weight. As so often happens at Verulamium, the destruction of the latest strata had removed all evidence of the final fate of the building.

It was intended that this excavation should be the first of a series on a more restricted scale, spread over a number of years, and designed to elucidate the problems left unsolved by the large-scale operations of 1930-4, but the outbreak of war has led to the indefinite postponement of the scheme.

Preservation has, wherever feasible, accompanied excavation. In 1931 the stretch of the 2nd-century defences from the southeast gate up to and including the south angle had been placed in the custody of H.M. Office of Works for preservation as a national monument. Although not to be compared, perhaps, with the walls of Silchester and Caerwent, they form one of the most imposing relics of Roman city-defences. By the removal of thousands of tons of accumulated soil

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from the double ditch at the south corner, and the preservation of the projecting semicircular bastion at the angle, a complete cross-section is now exposed of the City's defences such as is not to be seen on any other British site. Of the monumental London gate, with its double carriage-way and imposing flanking drum-towers, no superstructure remained, but its exact plan has been marked out in flints upon the turf as a permanent record.

The Roman theatre has also been preserved at the expense of the Earl of Verulam, and the carved Corinthian capital from the stage now crowns a new column, the proportions of which were obtained from a complete drum recovered during the excavations (PLATE III).

Of the buildings uncovered in the southern part of the City few were sufficiently well-preserved to merit the very costly undertaking involved in preservation, even if this had been desirable or their situation had made it feasible. Three of the five practically complete mosaic pavements were lifted and are now set up in the Verulamium Museum. The largest—that flooring the *tepidarium* of a private suite of baths in Insula IV (c. A.D. 160-190)—has been preserved *in situ* in a suitable building. Near it is part of a second floor belonging to the reconstruction of the house, c. A.D. 300. Among the many achievements of the excavators of 1930-3 was the dating of the series of fine mosaics—a matter badly neglected by earlier antiquaries. Nowhere else in Britain can two pavements separated in date by more than a century be studied together *in situ*, the larger, upwards of 21 feet by 15 feet in size, still roofing a complete hypocaust system.

As recently as the late autumn of 1940, the east corner of the Forum complex has been outlined in flints on the grass plot adjoining the Museum, to indicate to the visitor the site of the civic centre of the City, much of which is beyond the reach of future excavation.

With the opening of the Verulamium Museum in 1939, the City Council of St. Albans once again earned the gratitude, not only of the 50,000 persons who have visited the collection in the first two years of its life, but of all who care for the proper preservation of our national antiquities. Here in a convenient building designed for its purpose, and situated in the very centre of the Roman City, are exhibited the many finds made during the ten years of excavation.

As has already been said, plans had been begun for continuing excavation in 1940, when war broke out, but though these must now be postponed until happier times, the weather has stepped in to ensure that no year, even in war-time, shall be allowed to pass without adding

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its dole to our accumulating knowledge. The southern part of the City is now occupied by football and cricket pitches and tennis courts. Between the shed that covers the largest mosaic pavement and the newly constructed lake, the grass is kept constantly cut during the summer. Beneath it lie not only those roads and buildings already explored, but many others not yet discovered. During every dry period in summer some of the streets of the Roman City appear as brown streaks, the grass upon them, more shallowly rooted, scorching before its surroundings. In the prolonged drought of August 1940 not only was the chess-board street-plan of this part of the City clearly to be seen, but several buried buildings were so clearly indicated that surface measurement became practicable. At this juncture Mr O. G. S. Crawford* was able to arrange with the Air Ministry to undertake an aerial survey, which was carried out on the morning of 12 September from a height of 3000 feet (PLATE II). The results, combined with such measurements as were feasible from the ground, have been added to the plans of the excavations already described, and are shown on the plan facing page 113.⁹

Some comment on the new features that here appear for the first time may now be added. Watling Street is visible from the air-photographs in several places as it slopes down from St. Stephen's to the southeast gate, and from here it is clearly marked as far as the main road-junction facing the triangular temple. It continues some way to the east of this, passing on the left the shop with the cellar explored in 1930. No trace whatever could be seen of it after the next road-junction, and it seems probable that it became disused from this point when the 2nd-century City was laid out, and was removed to make way for buildings as the air-photograph seems to show. If so, the traffic would be carried on the road next to be described to the south entrance of the Forum, and hence round the east side of that building. It was noted that the main east-west road through the City widens to 35 feet or more to the east of the Forum entrance, perhaps to provide a sort of municipal car-park at this central spot. At the present day such a car-park once again occupies an area a few yards further east.

Perhaps the most important fact shown by the new air-survey is the road just mentioned. It leads south from the south entrance of

* Acting on a suggestion made by Mr Corder himself, in a letter to me.—O.G.S.C.

⁹ The additions made to the map of Verulamium since the publication of the definitive report on the excavations of 1930-4 may be observed by comparing the map here published with plate cxix of that report.

PLATE I



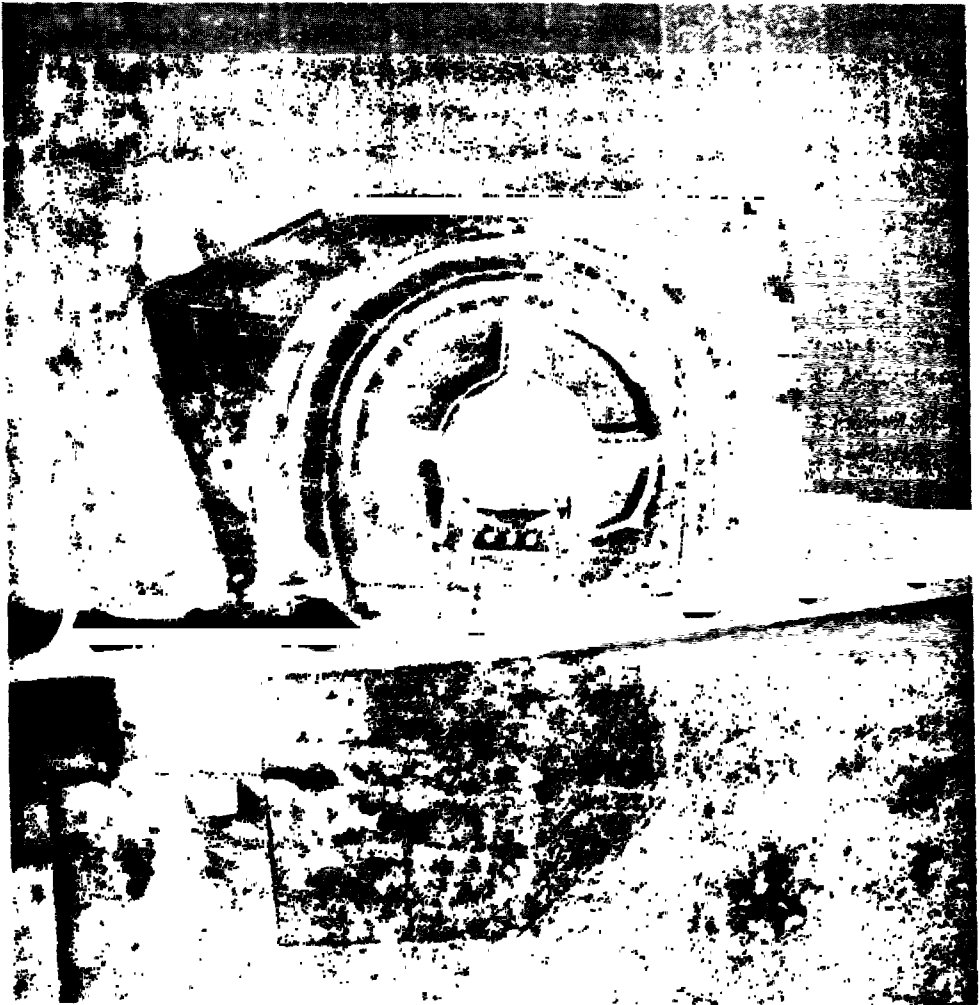
ROADS AND BUILDINGS BETWEEN TEA PAVILION (RIGHT HAND TOP) AND LAKE (LEFT HAND BOTTOM)
IN THE SOUTHERN PART OF VERULAMIUM

The City Wall is seen as a straight white line along margin of lake, and buildings in crop-sites alongside streets

Ph. R. H. Coan. Copyright reserved



GENERAL VIEW OF PART OF VERULAMIUM TO THE SOUTHEAST OF THE FORT (OUTSIDE RIGHT HAND MARGIN OF PHOTOGRAPH, SHOWING STREETS (WHITE) the right hand bottom corner)
The Verulamium Museum
Copyright reserved



THE THEATRE, VERULAMIUM

Ph. R. A. E. Crown Copyright reserved



PLAN OF ROMAN CORRIDOR HOUSE REVEALED AS CROPSITE SOUTHWEST
OF THE ROMAN THEATRE OF VERULAMIUM

Ph. R. A. E. Crown Copyright reserved

the Forum and can be traced all the way to the ramparts, except where hidden by modern tennis courts.¹⁰ Parallel to this runs another road forming the southern continuation of the line taken by Watling Street through the northern half of the City. This road was exposed by Mr Lowther in 1935 at the eastern boundary of Insulae XII and XIII, and was noted again by Mr Cottrill during the laying of the drain from the tea pavilion mentioned above. It was now visible as a brown band, about 20 feet wide, across the high ground west of the lake, until it ended abruptly on the edge of the slope, where it was, in all probability, buried beneath upcast from the recently-constructed lake (PLATE I).

The most interesting of the new buildings to be seen during the drought lay just south of the Forum, where on the east of the new road from the Forum Entrance, adjoining the 'car-park', appeared the walls of a double rectangle burnt out on the turf in lines 18 inches wide. Though part of this building is obscured by the modern pathway and hedge, it suggested at once the plan of a small Romano-Celtic temple, about 53 feet square. Two such temples lie in a similar relationship to the Forum at Caistor-by-Norwich. On the opposite side of the same road part of the plan of another building was also observed. This consisted of a rectangular structure, 25 feet wide, ending in a room about 15 feet across, and flanked by a corridor some 8 feet wide facing the road, but the plan was obviously incomplete (PLATE II, right centre).

A considerable house appeared to the east of the road between the tea pavilion and the lake. It appears to have a corridor facing the road, with a number of rooms opening from it. This house was located during the laying of the drain mentioned above, and Mr Cottrill was able to assign its construction to the second century. Many fragmentary buildings were also indicated by the air-photographs in this area (PLATE I).

The course of the City Wall is well known, but its exact line was clearly visible along the western margin of the lake in several places. At one point south of the modern bandstand, which is placed on a mass of upcast from the lake, obscuring all Roman structures, is a long narrow rectangular building that is shown on the air-photograph to have flanking corridors. All these new structures appeared in that part of the City where the grass is short, and where in consequence the drought proved most effective, but even in rough grass or stubble two other buildings have been added to the plan as the result of the air survey.

¹⁰ This road is clearly visible across the middle of PLATE II.

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One is a small corridor house in the northern half of the City, lying to the west of the main north-south road, which could be seen right across the site (PLATE III). It is remarkable that this building should have been shown up on cultivated land on which there was no crop at the time, and in an area where nothing else is to be seen. It suggests a building sufficiently well preserved to repay excavation for its own sake. Situated as it is near the central area where late 4th-century occupation seems proved, its excavation might produce evidence of a kind lacking in the southern part of the City. The second, less clearly visible, lies under coarse grass in an area not yet excavated to the northwest of the hypocaust.

It may be years before conditions are again so favourable for air-photography. But all that the best air-photograph can do is to reveal the streets and buried buildings where these are sufficiently upstanding to cause parching of the turf above them. What it can never do is to give us the history of these buildings, or throw light on their relationship to one another, or elucidate, as only the study of stratified finds can do, the economic life of the community they served. Scientific excavation alone can do this. Though at the moment the prospect of renewed excavation may seem distant, it is well that we should bear in mind what still remains to be done, before our knowledge of Verulamium is in any degree complete. It has already been said that future digging in the southern part of the City is unlikely to throw much fresh light on its history, though it would obviously add to its plan. But the same cannot be said of the first Roman City, about which little is known. Wherever digging here has been undertaken it has been on a part of the site where important later stone structures have obscured the earlier wooden buildings, and where early floors have been disturbed or removed by later foundations. In the triangular area of the early city that lies outside the 2nd-century defences, the conditions are presumably different, and here excavation should give us what we seek. So far excavations have thrown little light on the last days of Verulamium, though all the indications have pointed to a shrinking and poverty-stricken occupation during the fourth century, and the abandonment of areas formerly inhabited. It may be that systematic robbing of the buildings, followed by centuries of ploughing, has removed the latest levels, but persistent search in the centre of the City—as for instance between the Theatre and the Forum, might yet be rewarded.

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APPENDIX

CHIEF EVENTS IN THE HISTORY OF VERULAMIUM

- 54 B.C. Julius Caesar sacked the stronghold of the Belgic chieftain Cassivellaunus, probably the fortified *oppidum* at Wheathampstead.

PRE-ROMAN VERULAMIUM (PRAE WOOD)

Late 1st cent. B.C. The Belgic City in Prae Wood takes the place of the Wheathampstead *oppidum*.

c. 15 B.C.-c. A.D. 10. Tasciovanus, king of the Catuvellauni, had his mint at Verulamium.

c. 10-c. 40 Cunobelin, son of Tasciovanus, transferred the Belgic capital to Colchester.

c. 43 Defences strengthened before the Roman Invasion of Claudius. Submission of Verulamium.

THE FIRST ROMAN CITY OF VERULAMIUM

c. 45 Construction of Watling Street. A new City established on the slopes of the valley is granted the status of *municipium*. Buildings of wattle and daub.

61 Boudicca, Queen of the Iceni, destroyed the City, shortly after which the Fosse earthwork was constructed.

THE SECOND ROMAN CITY OF VERULAMIUM

c. 130-150 Period of intensive development. A new City planned to include 200 acres along Watling Street, defended by stone walls and gates. Large and well-built public buildings and private houses and shops. Mosaic pavements.

3rd cent. Period of decay. Many buildings dilapidated and ruined.

c. 300 'Constantian Renaissance'. Much rebuilding within the City, followed after a short period by decline in wealth and population.

c. 303 Martyrdom of St. Alban.

c. 380 Theatre derelict: clumsy remodelling of Temple west of theatre.

410 Withdrawal of Roman control from Britain.

POST-ROMAN VERULAMIUM

428 St. Germanus, bishop of Auxerre, visited Verulamium to combat Pelagian heresy, and repel an army of Picts and Scots. Roman traditions still alive.

793 Offa II, king of Mercia, established the Benedictine monastery on the site of an earlier church.

1077-1097 Abbot Paul de Caen rebuilt the abbey with Roman materials from Verulamium.

11th-19th cent. Intermittent spoliation of Verulamium.

1847 Discovery of the Roman theatre.

1930-1940 Systematic excavation of Verulamium.

1939 Opening of the Verulamium Museum.

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The Viking Taste in Pre-Conquest England

by T. D. KENDRICK

VIKING art did not to any appreciable extent intrude into, or influence, English art at the time of the early raids (*c.* 800), or during the Settlement Period and the time of the Alfredian wars (866–900). In fact it does not come into the story until the tenth century, and it is easy enough to see why this is so. In the victorious West Saxon districts of England from which the Danes had been expelled, the Christian and quasi-Carolingian ‘Winchester’ art had been established, and for the leading men of free England Viking art was a hostile thing representing heathendom and the abominable enemies of English civilization; while inside the Danelaw the Viking settlers themselves struggled, presumably with no grander equipment than modest wood-carvings and minor metal and bone ornaments, against a magnificent and firmly established Hiberno-Saxon art that, expressed in an imposing series of sculptured crosses and illuminated books, splendidly surpassed Viking art in its own barbaric idiom. Only slowly, then, and with very timid beginnings, could a Scandinavian style gain ground, and this it did, not at the point of the sword in a period of Viking ascendancy, but in those years succeeding the Viking settlement when the English had regained the upper hand. It is, indeed, after the final reconquest of the Danelaw under Eadred (*d.* 955), after the last of the foreign kings of York had been driven out, and in a period of peace that is roughly defined by the reign of king Edgar (959–975), that some sort of amalgamation between the Hiberno-Saxon and the Viking tastes is first discernible in the districts settled by the invaders.

The first point to make is that real unmistakable and easily recognizable Danish art is only very seldom to be found in Northumbrian sculpture. Just a few pieces, however, do reflect the Jelling style. This is represented in its home country by the sumptuously decorated horse-collars at Copenhagen, probably made in the period 925–950, and we know them to be a familiar, rugged, lavishly over-ornamented display of barbaric art that in general character, and in many details,

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closely corresponds to famous barbaric ornaments from the British Isles such as, for instance, the Tara brooch in Dublin. If we select one of these collars and ask what gives it its special Jellinge character, the answer is that it bears interlaces and animal-ornament (FIG. 1) that we recognize as a mannered Scandinavian version of the equivalent Irish or Hiberno-Saxon ornaments. Thus Danish animal-pattern of the Jellinge order is typically a loosely knit and hectic confusion of violently racing creatures. It is a very strong and tempestuous design ; but it is also muddled and heavy and unsmooth ; and we miss the sweeping easy-flowing graciousness of line that is characteristic of good Late Saxon work in this same vein. The distinguishing feature is the evenness of the emphasis throughout the whole design. It is all, as it were, of one width and one value. We can see this in the runs of interlace, but it is particularly noticeable in the animal-patterns, for the linked creatures are drawn—ears, limbs, and all—in

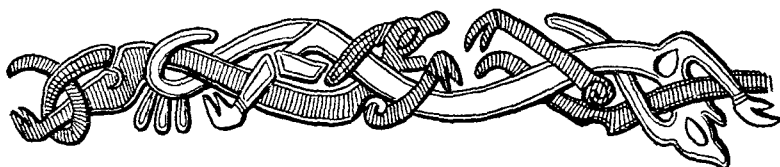


FIG. 1. DETAIL OF HORSE-COLLAR, DENMARK

a single heavy band. There is nothing Anglo-Saxon about this treatment of the lacertine beast. If there were, we should see a greater accent on the dominant and fluent ribbon-form of the animal which would stand out against a filmy interlace of lighter wiry lines.

When we find this Jellinge animal-style in the English Danelaw, it is seen at its best on minor imported ornaments that were brought to this country by the Vikings, and, as might be expected, since it was not originally in its homeland a sculptural style, it makes only an awkward and half-hearted leap from these trinkets into the grander realm of Northumbrian sculpture. Nevertheless there are at least two instances in which the English representative of the Danish Jellinge animal appears on Danelaw stone-carvings in such a markedly foreign guise that the sculptures in question seem to be more Danish than Anglo-Danish. Neither of them, be it observed, is a cross. Crosses were English, and all the so-called Jellinge designs on the crosses are to a much more appreciable extent Anglicized ; but these carvings to which I now refer are a small architectural fragment from Clifford Street,

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York,¹ and a fragment of a hog-back tomb-stone (PLATE II, 1) at Pickhill, near Northallerton. Both show a forward-facing animal with a lappet or ear that forms a heavy background of two-strand interlace. They must be carvings of the second half of the tenth century, and I feel that if they were not the work of a Viking, then the sculptor was an Englishman who had deliberately accustomed himself to designs that had a pronounced Danish accent.

It will be wise, however, to ignore mere details of design, such as this Jellinge animal-pattern, and instead to try to recognize a Viking style that reflects in general terms the Scandinavian fondness for a coarsely exuberant, heavy, unsteady barbaric ornament of the Jellinge sort. In practice this is not very difficult to recognize, and it can be easily distinguished from merely crude and clumsily carved Anglo-Saxon ornament. The salient fact is that the Jellinge style represents an un-English method of spreading a pattern over a given surface. A good example is the 'bound Devil' sculpture² at Kirkby Stephen in Westmorland, which is as clearly a Jellinge work as is the Crucifixion face of Harald Gormsson's monument (c. 980) at Jellinge itself. As might be expected, the Isle of Man is a very good place in which to study the style, for the Norse crosses there offer several instances in which Viking art alters, Jellinge-fashion, the character of the decoration on what was originally an Irish-type monument. In the Norse area of England there is one supreme example of the Jellinge style influencing the entire decorative ensemble of an ambitious cross. This, of course, is Gosforth,³ which on stylistic grounds would have to be called Anglo-Norse, even if it did not bear Edda subjects. In the Danelaw we find a strongly characterized Jellinge influence chiefly in certain details of otherwise English crosses, and on the whole it is surprisingly rare. Indeed, I am inclined to think that the Jellinge style was much more important and more firmly established in the Anglo-Norse area than in the Anglo-Danish world, and I suppose the explanation is that Anglo-Saxon art in Yorkshire, the headquarters of the Danelaw, was far more vigorous and effective in the Danish period than is commonly believed. It could, in fact, beat Jellinge art at its own barbaric game. Let me, however, in justice to the Danes, cite first of all an example of the maximum Jellinge influence on an English monument in Yorkshire. This is a fragment of a cross-shaft at Otley in the West Riding⁴; it bears

¹ W. G. Collingwood, *Northumbrian Crosses*, fig. 144. London, 1927.

² Collingwood, *op. cit.* fig. 187.

³ *ibid.*, fig. 184.

⁴ *ibid.*, fig. 175 aa-dd.

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a run of entirely normal Anglian interlace, two dishevelled tightly knotted runs of interlace in the Jellinge manner, and a Jellinge-type animal pattern; in other words, this cross was three-quarters Jellinge, and that is about as far as we get. The other Yorkshire crosses bearing Jellinge ornament are three-quarters English.

Now let us consider the problem of the so-called Jellinge animal. I have mentioned two instances that have a really Danish feel. In my view most of the other examples do not possess a definitely Danish character. I believe that they are neither Scandinavian animals nor English versions of Scandinavian animals, but English barbaric animals returning to fashion as a result of the Viking interest in them. Sometimes, as for example at Otley, they are handled in a recognizably Viking manner; but I do not think this necessarily means they are of Viking origin. It is not hard to find an example of animal-pattern in the Jellinge style that is obviously suspect as regards its origin, for the reason that it is to be found on an accomplished and competently carved English monument. Consider, for instance, the remarkable cross (PLATE I, 1) at Sockburn-on-Tees in co. Durham, just over the Yorkshire boundary. The cross itself is a monument influenced in form by the English 'Round Shaft' crosses, since the lower portion of the shaft is plain, while the ornament of the upper part is framed in a curious manner that represents the 'sliced' faces of the Round Shafts. The tightly woven incoherent mesh of Jellinge-like animals fills one of these faces, and here we have unmistakable evidence of the Viking taste; but another face is panelled, English fashion, and includes Saxon frets and cable-patterns, and a little individual study in the Saxon 'portrait' manner of the animal that appears again so differently treated in the Jellinge passage; and on the other two faces there are full-length runs of fine English interlace; so that the whole cross is thoroughly Anglo-Saxon except for the Jellinge panel and the odd zoomorphic treatment of the bottom ends of the 'slices'. It shows us how gently, as it were, the Viking taste intruded, and how cleverly it could be used by a sympathetic English sculptor to enrich and enliven a nobly planned native carving of the end of the tenth century.

In this Sockburn cross the Danish style does not supplant the English style or even alter the general character of the monument. The most we can say is that Jellinge influence adds a Scandinavian wildness and evenly distributed heaviness to one solitary element in an English design; and as it was the animal-pattern that was particularly susceptible to the Viking taste, we may venture to infer that the obvious Viking

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interest in this respect was responsible for the revived popularity in the late tenth and early eleventh century of the old English theme of the interlacing Ribbon Style beast. For that, I think, is what happened. Anglo-Saxon barbaric animal-ornament was revived. And why not? The English had done all this 'Danish art' business before, and could themselves exhibit their own traditional patterns as subjects for the newly fashionable Danish handling. The well-known coped grave-slab from St. Denis, York, bears a Jellinge pattern in the form of a closely packed and disordered design of animals netted in a thick two-strand interlace; but we observe that some of these creatures are winged and are not really Jellinge animals at all, but the English winged biped. Similarly, on the 'Jellinge' cross-shafts from Folkton, Yorks. (PLATE II, 2), and Gainford, Durham, the basic pattern is not Danish, but the English 'combat' design to be seen on the pre-Danish St. Alkmund's shaft at Derby,⁵ or, going further back, at Breedon on the Hill, Leicestershire.⁶

The immediate English pedigree of these particular designs is to my mind further established by the fact that on the Folkton and Gainford crosses the bodies of the animals are emphasized at the expense of the surrounding interlacements, which are relatively light in weight and do not grossly and closely encumber the form of the creature itself. One asks, in fact, why we call such designs Jellinge work, and the answer is that they do plainly possess something in common with the more outspokenly Danish-fashion carvings, as seen at Pickhill, and this something is simply the Viking taste for a flat, sprawling, and heavily vigorous ornament. The point is that they are not Jellinge carvings because they bear characteristically Danish animals. And this is true of some other so-called Jellinge crosses in Yorkshire that bear an isolated s-shaped beast with backward-bent head such as we see at Middleton (PLATE I, 3), Ellerburn, Nunnington, and Pickering, all places in the North Riding. These beasts are more English than Danish, for the creature comes straight out of the grand period of Anglo-Saxon art, and its real origin is to be sought in the Lindisfarne Gospels; and, though this is the Viking period, they are still drawn English-fashion with thinnish interlacing appendages. They represent, in other words, the antique Hiberno-Saxon barbaric animal-style reappearing as a contemporary of the Danish animal proper, which is *ex hypothesi* its own offspring. To make quite sure about the English

⁵ T. D. Kendrick, *Anglo-Saxon Art*, plate xcvi, London, 1938.

⁶ *ibid.*, plate lxxiii.

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character of the Middleton kind of animal-pattern, we have only to look at the tenth century panelled cross at Aycliffe, co. Durham.⁷ This is good traditional English work, panelled in the ancient Northumbrian style, and it is far too prettily neat and much too methodically organized for us to describe it as influenced by the Jellinge style. Yet a panel on one of its edges contains two interlocked s-shaped beasts of the Middleton type, showing very well indeed the light and open wiriness of the surrounding interlacements that in my view stamp the design as purely Anglo-Saxon work.⁸

The best evidence for the revival of our own animal-ornament in northern England during the Viking Period is supplied by a late tenth century cross in Cumberland outside the Danish area. It will not do to say that the animals on the cross to which I now refer are Norse; for we know what animals in the Norse and Hiberno-Scandinavian variety of the Jellinge style are like, and these creatures are not of their kind. They are to be seen on the face of a fragment of a shaft (PLATE I, 2) at Cross Canonby, and are a free-style series of lively lacertine creatures, without interlacing appendages, that bite viciously with backward-turned heads at their own bodies. The very satisfactory reason for claiming that they are entirely and absolutely Hiberno-Saxon is that the same creatures have already made their appearance in Northumbrian art of an earlier age, and can be seen in the corner panels of the front of the Franks casket (FIG. 2) which was carved about 700. Yet the Cross Canonby shaft is Viking-period work, and if we look at its edge we can see these same creatures combined in an interlacing design that most certainly reflects the Scandinavian taste.

What it comes to is that Jellinge art in Northumbria is not a forcibly imposed Viking style which the Saxons had to copy from Scandinavian originals, but a revival of the old-established system of Hiberno-Saxon art that was to some extent inspired by Scandinavian example, and to some extent influenced by a characteristically Scandinavian type of design. The important point seems to be that at the time of the appearance of Viking art, Northumbrian art was moving in the direction of a Carolingian style, that is to say it was forsaking, although with

⁷ Collingwood, *op. cit.* fig. 97.

⁸ There is a second Aycliffe cross of even greater interest from the point of view of the Hiberno-Saxon revival, but it does not seem to have been illustrated. Collingwood, I think correctly, assigns the St. Oswald's shaft at Durham to this period. I am sorry to say that when I was studying an earlier period I attributed it to the 8th century (*Anglo-Saxon Art*, p. 137). This mistake at least shows that the 10th century revival is real.

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appreciable hesitation, the barbaric style for the classical style. Had it not been for the Vikings in York, the Easby and the Aldborough crosses⁹ would have been followed by others of their kind. The acanthus would have flourished in the place of the withered vine-scroll, and there would have been a Northumbrian 'Winchester' style. It was the Vikings who put back the clock. Themselves loving barbaric art,



FIG. 2. DETAIL OF FRANKS CASKET (x 2)

they welcomed an English revival of it in the provinces that they occupied. The timid Carolingian experiments were forgotten, and it was with the ancient art of the Columban missionary Saint Aidan, not that of the Francophile Alcuin, that the Saxon sculptors met the challenge of the Northmen. Let us count it to their credit that imported designs were swept quickly into the background, and that the Viking taste was allowed to do little more than occasionally introduce a note of unrestful dishevelment, that by disturbing the smoother and more

⁹ Kendrick, *op. cit.* plates LXII, LXXVIII.

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orderly English designs have left us an easily recognizable period-style most appropriate to a turbulent age.

The Ringerike style is the next manifestation of the Viking taste that we have to study. Described in its simplest terms this Ringerike ornament, as Dr Brøndsted has shown, is the southern English acanthus decoration re-drawn in the ragged and irregular Scandinavian manner, and the explanation of the name given to the style is that it is called after a district in Norway where typical examples of the ornament are found. The source of these designs is to be found in 'Winchester' illumination, or in minor arts reflecting this manuscript style, and it is in the southern districts of our country, particularly in the London area and in Wessex, that we find most of the English examples of Ringerike design; furthermore, let us note carefully that these all belong to the period of Viking ascendancy in the eleventh century that began with the successful invasions of Svein (d. 1014) and Cnut (d. 1035) who were kings of England. The Ringerike style, therefore, first made familiar in England in the closing years of Cnut's reign, enjoyed the prestige of being a favourite decoration of a victorious invading people, and it is probable that there must have been quite a taste for Ringerike designs in this country, since, as I shall show, there can be no doubt about the interest taken in them by the English. For this reason the Ringerike style has an entirely different significance from that of the Jellinge style, which, as we have seen, is confined to the Danelaw and the Norse area, and remained, so far as Winchester was concerned, the outlandish idiom of subjugated foreigners.

The supreme masterpiece of the developed Jellinge style in Denmark is Harald Gormsson's memorial stone, erected at Jellinge itself about 980. On one face is the Crucifixion, done Jellinge fashion, and on another face is an animal-combat scene, a splendid lion enmeshed in the coils of a serpent (FIG. 3). This lion is obviously not a Jellinge Ribbon Style animal; it is the Great Beast, as Dr Brøndsted calls him, a magnified and elaborate version of the English lion such as is to be found on the St. Alkmund's shaft at Derby; but the design is complicated by what seems to be a new element, the introduction of acanthus leaves which sprout from the tail and crest of the lion and can be seen budding from the trunk of the serpent. This strangely incorporated foliage was rightly explained by Dr Brøndsted as a contribution from our 'Winchester' art, in which a prodigal display of flourishing acanthus

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scrolls is one of the principal decorative features. There is no difficulty in recognizing the plant on the Jellinge stone, for its fat and fleshy leaves are very like those in most of our Winchester illuminations; and in England beasts with fine tails or crests of this foliage had been known ever since the days of the Book of Cerne (*c.* 825); and there are many examples of them among the later ornamental initials in the English manuscripts. In other words, there is no question about the source of the pattern carved on the Great Beast face of the Jellinge stone, and the carving shows how enormously powerful had been the impression



FIG. 3. DETAIL FROM HARALD GORMSSON'S MONUMENT

made on the Danes by English art in the days of St. Dunstan. Nevertheless this grand sculpture is interesting not so much because of these borrowings, but because of its own indisputable magnificence; for this shows us that at the time of the renewed invasions in the 'eighties' the Danes could boast of a royal and vigorous art.

As we might expect, this altered and impressive Danish Jellinge style makes its mark in the Yorkshire Danelaw where we occasionally find the local Ribbon Style 'Jellinge' beast entangled in an interlace background that breaks into gay little spiral scrolls and waving tendrils. The three examples of what we may call the Yorkshire 'mature Jellinge' that is influenced by the Great Beast Style of Denmark are to be seen on

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the grave-slab at Levisham (PLATE II, 3), a cross shaft at Sinnington, and a cross, a Round Shaft derivative, at West Gilling, all monuments in the North Riding. But though we find the Danelaw Jellinge animal thus embellished with surrounding foliate frills, the carving is heavily and awkwardly done, and can scarcely be described as marking any notable stylistic change in northern England. On the other hand, in southern England we discover a much more significant sequel to the Danish Great Beast style.

We are able to compare the Great Beast sculpture at Jellinge with an Anglo-Danish gravestone carved in London after the conquest of England ; for it happens that the same subject, the combat of the Lion and the Serpent, adorns the tombstone (PLATE III, 2) of a Viking who was buried in St. Paul's churchyard probably about the time of the death of king Cnut. It is a rectangular headstone, two feet in width, and originally painted ; and I think it is beyond dispute the finest Viking antiquity in the country. It is handled in just the same flat style as the Jellinge sculpture, a low relief with a secondary decoration of incised lines, and the two lions are plainly cousins. But the Jellinge heaviness has gone. A gale has swept over the composition. The lion is taut and strained, and his head is turned backwards violently and aggressively ; the serpent is an eddying blast of agitated lines that wave angrily before the chest of the beast, savagely entangle his forelegs, and sweep upwards to do battle with his lashing tail. The slowly waving fat acanthus has vanished. In its place are long extravagant tendrils with tightly curled ends that toss tempestuously in the air. It is acanthus transformed into a new and preposterous barbaric foliage. It is the Ringerike style.

In this, its purely Viking-form, Ringerike foliate ornament appears on two other sculptures in southern England, a grave-slab from St. Paul's churchyard in the British Museum and a fragmentary carving in the church at Great Canfield, Essex. In the north it is to be seen once only, on a fragment of a grave-slab at Otley in the West Riding. In the south, however, in addition to the three carvings I have mentioned, there are several minor antiquities that bear designs in the obviously foreign Ringerike style. A really magnificent example is a bronze panel from a weather-vane that was found in Winchester and is now in the Cathedral Library. It is Viking work of about 1050 with nothing English about it, and I do not know any better example of a design that in a small compass illustrates what I call the Viking taste, here manifested in strong lines stirred into a slowly

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writhing mass that is whipped up into a tremulous agitation at the fringes of the main pattern. It has been suggested, I think with good reason, that there is something oriental about such designs as we see on the Winchester panel. This does not mean that the derivation of the foliate ornament from English acanthus patterns is seriously in doubt, but that the perfected and strongly idiomatic Scandinavian version of our acanthus designs was worked out in the North under influences from the East coming through Russia or Hungary.

Without in any way copying the real Scandinavian Ringerike style, English art nevertheless, upon occasion, produced its own contemporary dishevelled travesty of the acanthus scroll as though in response to this strongly expressed Viking taste. In our eleventh-century sculpture we see this very rarely, but a good example of the kind of thing I have in mind is a grave-stone (PLATE III, 1) from Bibury, Glos.,

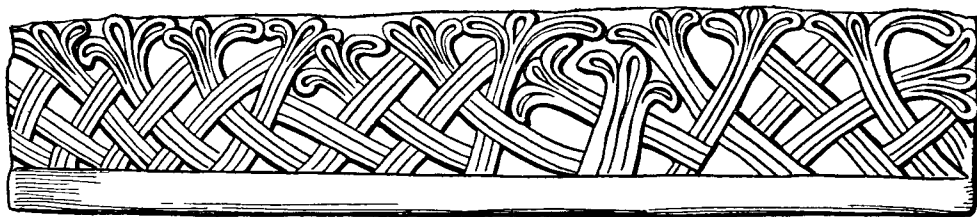


FIG. 4. DETAIL OF FRIEZE, SOMPTING

now in the British Museum. It bears a foliate figure-of-eight scroll, in type like that on the weather-vane, and it has the same sort of agitated excrescences, and the same sort of complicated interlacements at the crossing of the main branches. But we notice that the design lacks the extravagant savagery of the true Ringerike style. The foliage is much gentler, much more natural, and is just a poor arid version of the fine acanthus scrolls in our Winchester manuscripts ; and when, taking this hint, we find that the interlacements at the crossings, the forward-facing lion-masks, and the dragon-heads at the bottom of the scroll, are all part of the paraphernalia of Winchester art, as seen for instance in the well-known initial in the Beatus Vir folio of the British Museum Psalter, Harley 2904, then we have to accept the Bibury carving as bearing an English design vaguely altered in the direction of the fluttering disorder of Ringerike art. To my mind a parallel example is the acanthus frieze (FIG. 4) in the church at Sompting, Sussex, which is long and stalky, and in a curiously ragged disarray.

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In the eleventh-century English manuscripts the point I am now making is perhaps more clearly emphasized. On general grounds we might expect to find some evidence of an appreciable Ringerike-type undercurrent in Saxon work, because it is known that there is a tendency for the fat Winchester acanthus leaf to turn into a thin and lengthy blade with a tightly curled tip, thus approaching in form the true Ringerike leaf. We can see the beginnings of a changed style in the writhing and disordered foliage of the splendid Gospels (B. 10. 4) at Trinity College, Cambridge; but this nascent Ringerike feel is illustrated here by a detail (FIG. 5) from the Bury St. Edmunds Psalter in the Vatican, in which the leaves, though formally and symmetrically posed,

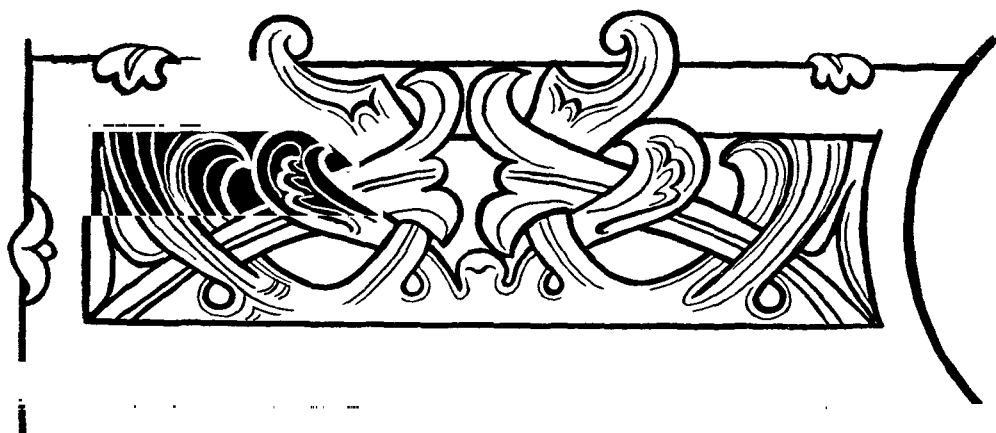


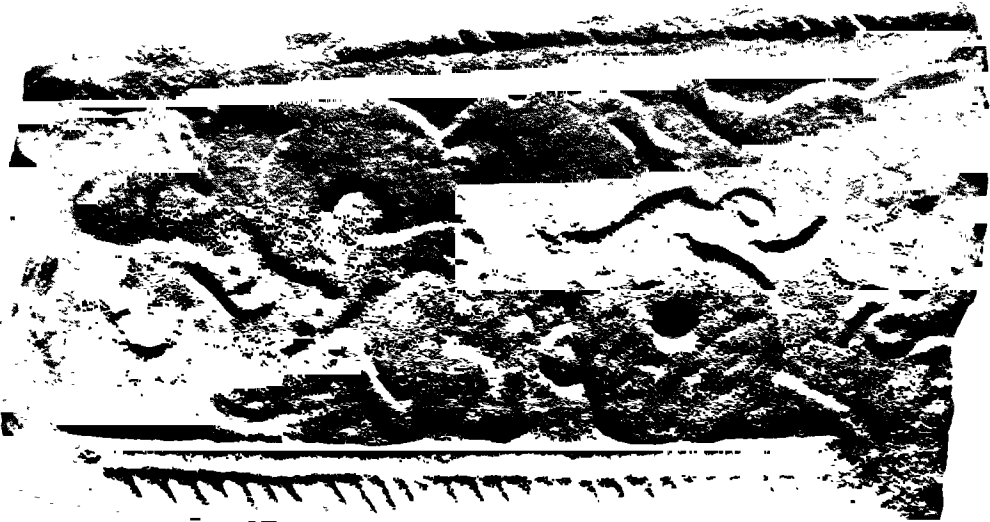
FIG. 5. DETAIL FROM BURY ST. EDMUNDS PSALTER

and unmistakably English in character, can nevertheless be described as storm-beaten, and lean crazily across each other at violently inclined angles. The plainest evidence, however, that there is an independent English approach to the Ringerike type of design is afforded by the group of initials that depend on the types in the Bosworth Psalter in the British Museum, that is Canterbury work of the time of St. Dunstan and may have been prepared for the archbishop's own use. In this Psalter the three principal initials are best described as zoomorphic acanthus-scrolls in the form of a bold smooth interlace made up of a split-bar scaffolding with elongated tendril-like leaves (PLATE IV, 2), and, on initials not illustrated, such unusual features as closed rings and sharp-cornered 'elbows' with an interior acanthus frill. These initials are also remarkable for their colouring, which is

PLATE I



1. SOK KBURN (see p. 128)
full height, 7 feet
Ph. B. Clayton



2. CROSS CANONBY (see p. 130)
height, 21 inches
Ph. B. Clayton



3. MIDDLETON (see p. 129)
height of panel, 22 inches
Ph. Lawrence Stone



1. PICKHILL (see p. 127)
length, 19 inches
Pl. J. F. Tetley



2. FOLKTON (see p. 129)
height, 16 inches
Pl. J. F. Tetley



3. FLAVESHAM (see p. 131) height, 25 inches
Pl. E. D. Kendrick



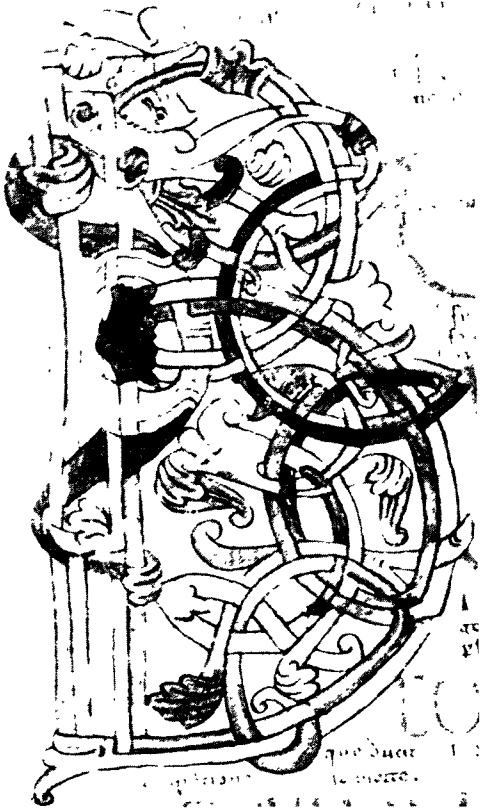
1. BIBURY (see p. 135) height, 25 inches
Ph. British Museum



2. ST. PAUL'S CHURCHYARD (see p. 134) height, 21 inches
Ph. Gaultthorpe Museum



1. PSALTER, CAMBRIDGE UNIVERSITY LIBRARY
MS. E.1.1. 23, f. 37v, detail (see p. 139)



2. BOSWORTH PSALTER, BRITISH MUSEUM
Add. 57, 37 v, detail (see p. 139)



3. PSALTER, CAMBRIDGE UNIVERSITY LIBRARY
MS. E.1.1. 23, f. 38, detail (see p. 139)

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crude, jarring, and cold. In origin this style is Frankish, but the Psalter presents a most extraordinary barbaric insular version of the Frankish work from which it is chiefly derived, and it is a very astonishing thing that such a style should flourish in the south of England in the 'Winchester' period in an important manuscript believed to have been used by St. Dunstan himself. We get an unexpected revelation of what we may describe as a generally suppressed tendency of south English art in the tenth century, and when we find this style further developed in some of the author-texts of the first half of the eleventh century, we must admit an English disposition to welcome the kindred Ringerike work. I take it as certain that the artists who drew these initials would find nothing distastefully foreign and unacceptable in a true Ringerike pattern such as that, which a few of them may have actually seen, on the Winchester weather-vane. The design on this piece would, in fact, be likely to give them very great pleasure, and thus I say that in the details of one or two of the great ecclesiastical manuscripts of the real Winchester type and in the background of these minor decorative initials, we may feel some possible community of taste emerging which would help to explain the Viking's choice of the English acanthus scroll as his theme for the Ringerike design and the Englishman's friendliness to the Viking version of it.

There can be no doubt about this friendliness. In the Caedmon manuscript (Junius XI) in the Bodleian Library, an English work of the period 1030-1050, on a blank space at the end of the book, is a design for the binding; it is obviously one man's work, and yet the face is a good English acanthus pattern and the spine is a length of genuine Ringerike ornament. There is no mistake about it; for on the end page of the book are drawings in the same hand of two oval loops, probably designs for the metalwork clasps of the binding, that bear pure Ringerike pattern of the most sophisticated sort.¹⁰ The sketches show that this particular English artist was, as it were, bilingual, for he could draw traditional Winchester acanthus designs and also foliate patterns in the Scandinavian style, these last being done as well as any Viking could do them. Perhaps the Caedmon artist was deliberately trying to please two masters, an English ecclesiastic and a Viking royalty; for we certainly cannot pretend to be surprised at the juxtaposition of the English and Viking Styles in the artistic output of an Anglo-Danish society that doubtless had very good reason for narrowing

¹⁰ A. W. Clapham, *English Romanesque Architecture before the Conquest*, p. 135, fig. 42. Oxford, 1930.

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the gulf between the two arts by clever combinations of this sort. My point is that the union was made easier by the existing barbaric tendencies in south England art. I have already given an example of the kind of work I have in mind, and there are others to be found in this same Caedmon manuscript; for instance a drawing of Cainan sitting in judgment in an architectural frame that is at once notable for the ludicrous dishevelment of the foliage in the capitals (FIG. 6). The disordered mixture of leaves and bony interlace not only fails to have any architectural steadiness, but spills itself off the capital and waves

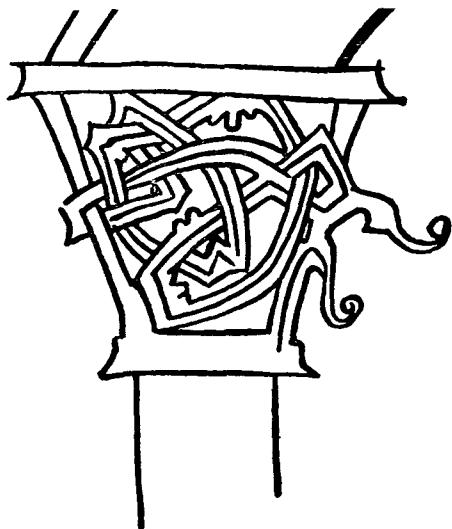


FIG. 6. THE CAEDMON MS. (detail of f. 57)

crazily into space. A column at the side of the charming scene of the Judgment on the Serpent bears similarly erratic and ill-disciplined ornament. It is just untidy nonsense, not part of a comprehensible and systematized decorative scheme; and we must regard it as a little period drollery very prettily inserted in what is otherwise fairly conventional south English drawing. But the important thing is that these two passages harmonize completely with the Ringerike designs in the same book.

There is one manuscript in which the Ringerike element is not an interpolation, as in the binding design of the Caedmon manuscript, but really an important element affecting the main ornament of the book.

THE VIKING TASTE IN PRE-CONQUEST ENGLAND

This is a Psalter of *c.* 1050 in Cambridge University Library. It contains some crude and ill-proportioned full-page drawings in orange-red and green that copy with an obvious awkwardness the Winchester manner, a variety of English initials in a purely Anglo-Saxon tradition, and also a number of initials that really do possess the true Ringerike feel. There is no other word for them but Anglo-Scandinavian. To perceive the significance of this foreign artist's style we must look at his handling of an orthodox English subject, the great initial B of the Beatus Vir folio (PLATE IV, 2), and compare it with the most celebrated of the tenth century Winchester versions, the British Museum Psalter, Harley 2904 (probably Ramsey work of *c.* 970). In the first place the design in the Cambridge manuscript has ceased to be a heavy dominating initial in brilliant colours. It is a wispy, faint thing outlined in pale umber with a little light yellow interior colouring. Furthermore, it is caught up into the overpowering ornamental system of the whole page, and is linked to the frame itself by the biting animal-heads at the corner of the upright. What it has lost in solidity, it has gained in liveliness and vigour. The acanthus is thinner; it reaches out long curling tendrils and clutches tightly; a new and animated wiry disorder possesses the entire letter, and the same excited turbulence is to be seen in the frame that is filled by acanthus whipped up into a violently agitated array of swaying leaves, some of which, quite irrationally, blow out from the bars of the frame into the surrounding space. It is more than the mere English counterpart of the Ringerike style which I have described, for instance on the Bibury stone; it is an indubitable approach, though using an English design and a purely English apparatus, to the actual Scandinavian idiom; and therefore it is no surprise to us, when we examine the manuscript further for this particular artist's work, to find that some of his smaller initials, drawn in brown with green and buff fillings, are closer still to Scandinavian Ringerike (PLATE IV, 1). They show the long bare Ringerike tendril, and the fiery flourish of these spirited tentacles is such that a Viking must have declared them to have been copied off one of his own monuments. Thus on the evidence of this manuscript we find in southern England in the middle of the eleventh century a nicely balanced state of affairs in which there seems to be a real possibility of some sort of fusion between the Winchester and the Ringerike styles, which had already appeared side by side in another manuscript. It is important, however, to say roundly that there is in fact no evidence that this fusion was achieved, or even that it was generally desired. What I am trying to emphasize here is a general

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sympathy and an occasional approach one to the other. The Cambridge Psalter is an exceptional testimony to this approach; and I introduce it not as a guide to a general tendency of Anglo-Saxon art, but as an illustration of the solitary vagaries of one original artist.

We have seen that in northern England the Ringerike style in a recognizable form is found once only, namely at Otley. Nevertheless certain Northumbrian crosses, bearing what I call 'belated scrolls', that is to say the final degradations of the original Anglian vine-scroll, seem to possess in certain details a faint Ringerike flavour, as though distantly influenced by the Viking taste that had become so fashionable in the south. An example is to be seen at Staveley, between Knaresborough and Boroughbridge, in the West Riding, where there is a cross-shaft ornamented on the face with a degenerate figure-of-eight scroll above which is a tangled interlace ending in dragged tendrils, that, though lacking the authentic Scandinavian fieriness, are however of the Ringerike kind. The same thing can be seen on a cross at Barwick-in-Elmet, close to Leeds; but it is in this city itself that we have the best example, for on the fine panelled cross in the chancel of the Parish Church there is a length of interlace that breaks into a vigorously waving tangle of these characteristic tendrils with the curling tips. I doubt whether a Viking would have recognized that the Staveley and Barwick patterns were influenced by the Ringerike style; but at Leeds he would have been very much impressed at finding something that really does look like a little bit of his native art flaunted on a cross that was otherwise entirely English in character. Of course, even this, added to the undoubtedly Ringerike carving on the grave-stone at Otley, does not amount to very much, and it remains true that the story of the Ringerike style in England is one that almost exclusively concerns our southern art.

The uneasy harmony between the two styles that we have been able to detect in the undercurrents of Winchester art does not in any way alter the dominant fact that they were indeed irreconcilable. Winchester painting and drawing represented the classical tradition and were principally concerned with naturalistic portrayal of the human figure, while Viking art brought to England nothing but abstract barbaric ornament. Though the political ascendancy of the Vikings may be responsible for the apparent friendliness with which this ornament was upon occasion welcomed into English work, it is by no

THE VIKING TASTE IN PRE-CONQUEST ENGLAND

means true that the victorious Danes sought to belittle or discountenance the immeasurably more impressive native art. On the contrary, the court style of the English kings became the court style of the Danish conquerors, and there is convincing proof of this in the New Minster Register, a British Museum manuscript of about 1020, in which there is a picture of king Cnut, accompanied by his English wife Aelfgifu Emma, placing a golden cross upon the high altar of the monastery. It is a purely English work, done with all the natural grace and fluency of Winchester drawing at its best, and it shows us that in the hour of his triumph a Viking, who had been crowned king of England, paid homage to the art of the conquered people, and as a good Christian monarch of European importance sponsored the traditional art of Christendom and of Western Civilization. Under such plainly declared royal patronage the Winchester style continued to flourish up to, and even beyond, the date of the Norman Conquest, while the Danish style after some inconsequential initial success in this country accordingly falters and fails. We have to remember that there is no evidence that the Ringerike style appears in this country before the closing years of Cnut's reign, and thus condemned by its own principal protagonist to a place in the background, its relative insignificance is not surprising. The real position is that against the few instances of its intrusion into English work cited here, must be set a large body of noble manuscripts and fine sculptures of the first half of the eleventh century, upon which the Viking taste had made no impression. Thus, summing up as regards the Ringerike style, it is on the whole true that in spite of the Danish ascendancy there is only evidence of slight and not profound Viking influence upon southern English art up to the time of the Norman Conquest. On the other hand, some decades afterwards, with the appearance of the Urnes style, we find ourselves once more involved with the problems of Scandinavian art ; but I think that English Urnes lies outside the scope of this paper.

A Datable 'Ritual Barrow' in Glamorganshire

by SIR CYRIL FOX

IN the *Antiquaries Journal* for April, 1941, a series of three barrows in Llantwit Major parish, near the sea-coast of Glamorganshire, has been described.¹ All showed stake circles under mounds of turf; in the largest a primary burial by cremation with a Middle Bronze Age B overhanging-rim urn gave some indication of the period within which the others should be placed. One of them, Six Wells 267', contained no burial; there was no charcoal or pyre material and the 'floor' was clean. In the centre was a hole carefully made, carefully filled, and domed over. I described it as a 'ritual pit' and the barrow as a 'ritual barrow'; recorded parallels appear to be rare.

A barrow 280 yards to the north of Six Wells 267' is shown on the map of the district (FIG. 1); it is named Six Wells 271' from the farm and from the height of its crest above sea-level. This barrow was investigated in October 1940 and is the subject of the present article (which owes much to my wife's help).

Six Wells 271' measured 90 feet in diameter and over 6 feet in height at the centre. It proved to be a turf mound of the same type as 267' but contained, in addition to 'ritual pit' and stake circle, a cremation burial in a cist. The structures disclosed will be described in the probable order of their creation; (1) the 'ritual pit' (and its immediate surroundings), (2) the stake circle; (3) the cist; (4) the barrow.

A hedge-bank and ditch crossed the top of the barrow, which had, moreover, been extensively dug into in recent months. Its condition thus dictated an investigation on the simplest lines possible. Two broad trenches were accordingly cut at right angles to one another across the approximate centre of the barrow; further clearances (all down to original ground level or below it) were limited to the minimum necessary to establish the character and date of the structure. The extent of excavation is indicated on the Plan (FIG. 2).

¹ 'Stake Circles in Turf Barrows; a record of excavation in Glamorgan, 1939-40'.

² i.e. the ancient ground surface under the mound.

DATEABLE 'RITUAL BARROW' IN GLAMORGANSHIRE

THE 'RITUAL PIT'

In the centre of the barrow (Plan, FIG. 2; Sections, FIG. 7) a dome of earth and clay was located, slightly harder than the surrounding barrow material; it was 14 inches high and 16 inches broad at the base. It is seen bisected in PLATE I, A. It consisted of a shell of mixed soil and clay (PLATE II, A) enclosing a mass of dark earth with pebbles of the local lias and chert. As in the case of barrow 267', there was a circular pit under the dome. This pit (PLATE II, B) was 12 inches in diameter,

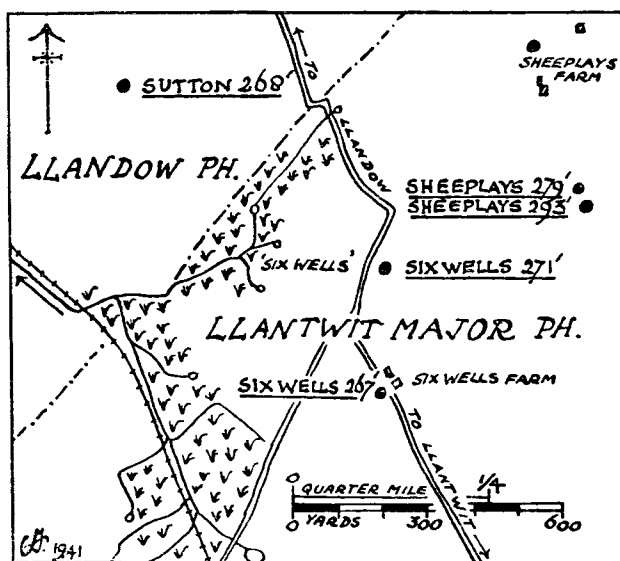


FIG. 1. MAP OF THE DISTRICT, SHOWING DISTRIBUTION OF ROUND BARROWS

and contained, on one side, similar material to that within the dome, which graded down into brown soil filling a narrow pipe in the Lias rock; on the other side there was dense grey clay which also appeared to be an artificial deposit.

In order to make sure that the pit did not contain a burial it was opened out to an unbroken rock surface, 2 feet below the base of the dome. The filling here was natural; yellow clay and disintegrating Lias nodules. FIG. 3 illustrates the structure in detail; it shows also the character of the barrow around and above it. The layer of 'orange clay', being a colour-change in a natural clay deposit, is probably slightly below the

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'floor' hereabouts at the time the dome was constructed.* Levels taken at various points, and evidence afforded by the stratification of the subsoil here and elsewhere, suggest that from 6 to 9 inches of turf and soil had been removed in the neighbourhood of the 'ritual pit'. This accounts for difficulties of interpretation, and the consequent vagueness of the figure; artificial and natural deposits graded imperceptibly one into another.

FIG. 3 shows, in addition to the pit, a dip in the 'orange clay' which can only have been induced by an artificial hollow made immediately above it. The relation of this hollow to the pit is best seen in PLATE II, B. It was filled with the greyish clay which hereabouts overlies the orange band. It should be noted that an artificial hollow, adjacent to the ritual pit, was demonstrated in barrow 267³.

There was no trace of burning near the pit; no charcoal in it or near it; no evidence of trampling, and no 'dirty' soil around it.

THE 'UNTRODDEN AREA'

Examination of the central portion of the barrow showed that removal of the ancient surface soil extended over a patch of some 30 square feet, mostly to the south of the pit. Beyond was an extensive area which, like the central patch, presented a feature rarely seen elsewhere on the barrow floor, namely, absence of the ferruginous deposit known as hard-pan. This deposit, commonly met with in turf barrows, is precipitated on comparatively impervious layers, due almost certainly to trampling. I conclude then that on the larger area to which I have referred trespass by the feet of men was avoided; and it is reasonable to suggest that since trampling obviously could not be avoided on the patch of ground immediately around the pit, its evidences were destroyed by the removal of the turf layer.

The area is defined on the Plan, FIG. 2, by the absence of stippling, the inner patch by a broken line.⁴ Under the whole of it the 'orange clay' already referred to was present. Both Sections in FIG. 7 illustrate the striking difference between the hard-pan-covered (trodden) and bare (untrodden) areas; show the position of the orange band; and indicate the patch where the surface soil has been removed.

* The circumstances, chemical and physical, which give rise to this layer, are under consideration by Dr F. J. North.

³ *Antiq. Journ.*, loc. cit. p. 119, and plan, pl. xxviii.

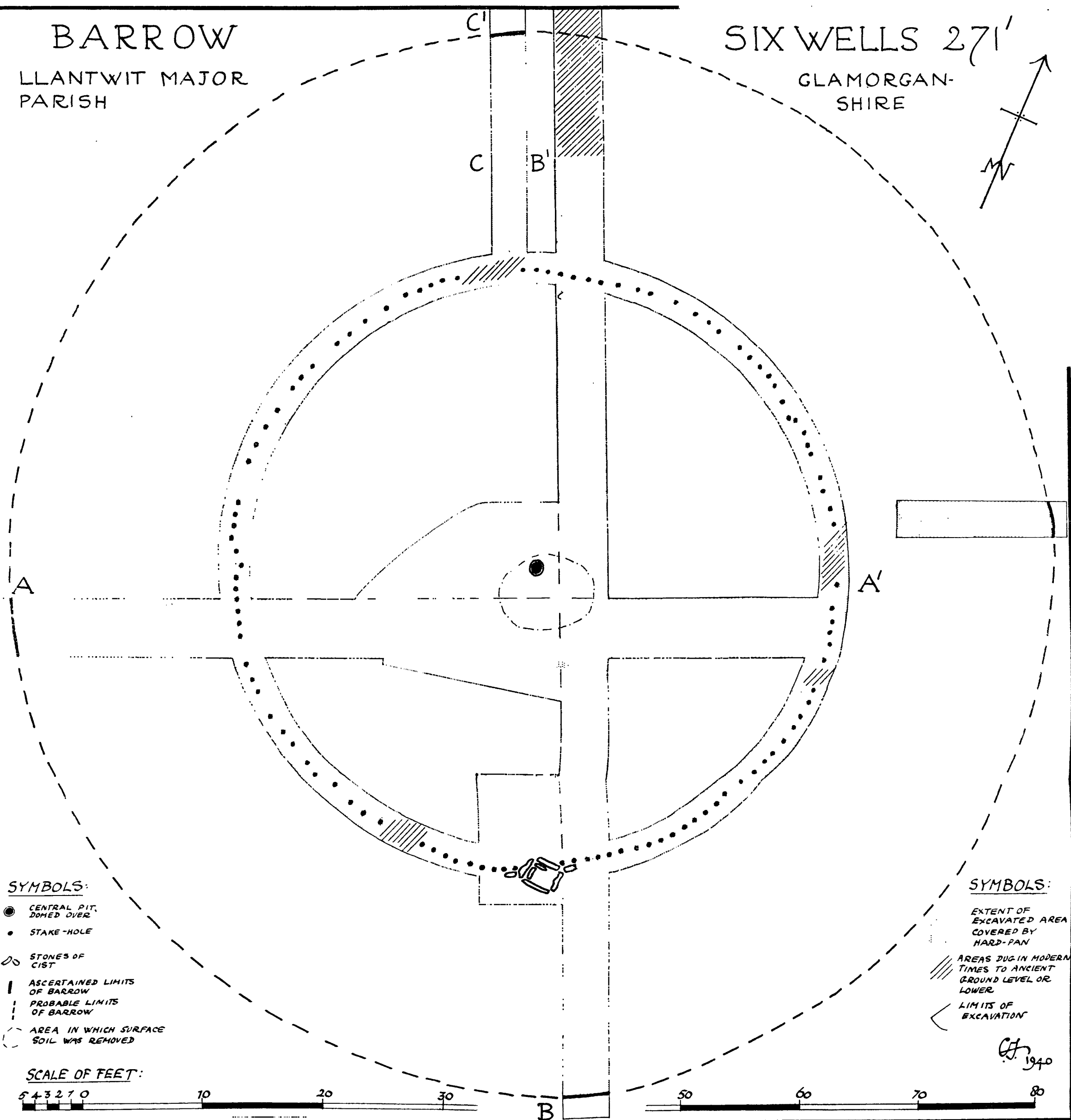
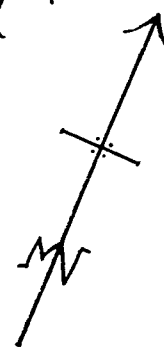
⁴ An approximation. Its limits were not accurately measured.

BARROW

LLANTWIT MAJOR
PARISH

SIX WELLS 271'

GLAMORGAN-
SHIRE



SYMBOLS:

- CENTRAL PIT, DOMED OVER
- STAKE-HOLE
- ⊞ STONES OF CIST
- ASCERTAINED LIMITS OF BARROW
- - - PROBABLE LIMITS OF BARROW
- ⊞ AREA IN WHICH SURFACE SOIL WAS REMOVED

SCALE OF FEET:



SYMBOLS:

- ⊞ EXTENT OF EXCAVATED AREA COVERED BY HARD-PAN
- ⊞ AREAS DUG IN MODERN TIMES TO ANCIENT GROUND LEVEL OR LOWER
- ⊞ LIMITS OF EXCAVATION

CH 1940

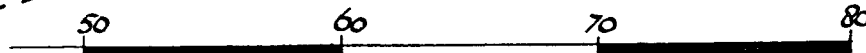


FIG. 2. PLAN OF BARROW

DATABLE 'RITUAL BARROW' IN GLAMORGANSHIRE

THE STAKE CIRCLE

A stake-hole about $2\frac{1}{2}$ inches in diameter and 10 inches deep, defined by a ring of dense black-and-yellow incrustation of iron oxide, was found in the west trench. It was 25 feet from the 'ritual pit'; and a circular trench of this radius being opened up, a complete stake circle was demonstrated, as shown on the Plan, FIG. 2.

In the southern part of the circle all the holes were as described above, and were readily found; in the northern part no trace could be seen of the great majority on the hard-pan floor of the barrow; but when the hard-pan was dug away and the natural soil thereunder disclosed, the stake-holes—sometimes unfilled and without any marginal incrustation, sometimes unfilled with a soft black ring, and sometimes filled with earth and so presenting a darker circular stain—were found in the ancient soil and subsoil. In short, these stakes had been 'drawn' before the barrow was built. This was also the case in barrow 267', where the whole of the circle had been so removed.

As for the depth, our pegs, which were a foot long, sometimes dropped into a hole with their tops level with the ground, and it was always possible to press them into the yielding filling for 9 or 10 inches. One hole, larger than usual, in the southeast quadrant, was open to a depth of 15 inches. As for size, while the great majority seemed to represent stakes from 2-3 inches in diameter, there were a few of 1-2 inches and fewer over 3 inches.

The number of stake-holes disclosed was 108⁵; there were probably six more, destroyed by the digging of sump pits in recent times (see Plan), making a total of 114.

The accuracy of the lay-out of the ring of stake-holes is remarkable. A circle struck from the centre of the 'ritual pit' on a radius of exactly 25 feet passes through no less than 64 of them, and the maximal error in the case of the other holes within or without the circle thus described is 9 inches. Such accuracy is rare in prehistoric lay-outs in this country. Incidentally, of course, it emphasizes the primary importance of the 'ritual pit' in the scheme of the monument.

The distances *between* the stake-holes, on the other hand, was very variable, as a glance at the Plan will show. To the south and southeast of the 'ritual pit', on either side of the cist (p. 149) the spacing of the stakes is most uniform and they were here closest together (± 1 foot); elsewhere only small groups showed any uniformity.

⁵ I omit from all future consideration the inner stake-hole of the close-set pair in the northeast quadrant (see Plan).

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Some of the interspaces, especially in the western part of the circle, are so wide (two being as much as 2 feet 9 inches and 3 feet 6 inches respectively) as to raise the question of an entrance or entrances.⁶ It should be noted that there was a gap in the same part of the circle in barrow 267'.

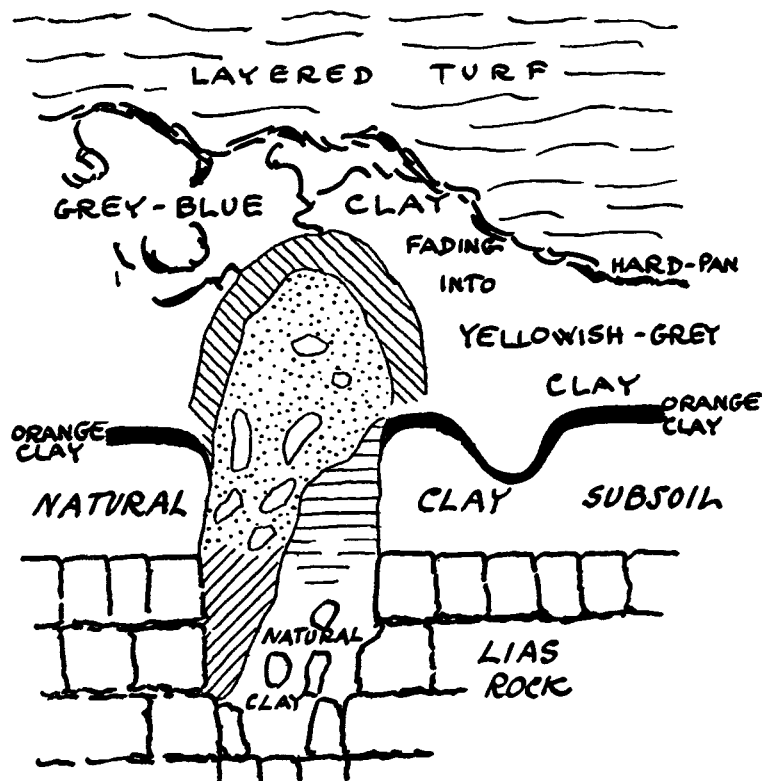
Interspace in feet and inches		Number of such interspaces	Expressed as percentage of 102 measurable interspaces
ft.	ins.		per cent.
0	8	2	2.0
0	9		
0	10	2	2.0
0	11	7	6.8
1	0	11	10.7
1	1	23	22.5
1	2	8	7.8
1	3	14	13.7
1	4	7	6.8
1	5	2	2.0
1	6	2	2.0
1	7	4	3.9
1	8	3	2.9
1	9	3	2.9
1	10		
1	11	2	2.0
2	0	2	2.0
2	1	2	2.0
2	2	2	2.0
2	3	2	2.0
2	4	2	2.0
2	9	1	1.0
3	6	1	1.0

In the Table on this page the incidence of each unit of distance is expressed as a percentage of the total number of interspaces.⁷ It will be seen that the incidence of the interspace of 13 inches is more than double that of any other, accounting for 22.5 per cent. of the whole ;

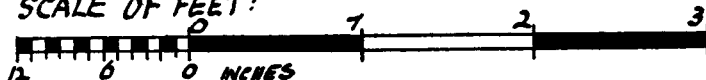
⁶ Every care was taken in such cases as these to establish the fact of the gap.

⁷ All measurements are from centre to centre of the holes.

NORTH GRASS LEVEL OF BARROW 5' 11" FROM TOP OF 'DOME' SOUTH



SCALE OF FEET:



SYMBOLS:

(DOME
AND
PIT
ONLY)



ENVELOPE OF MIXED SOIL



DARK EARTH WITH STONES



BROWN SOIL



GREY CLAY GRADING INTO



NATURAL YELLOW CLAY

GA.
1940

FIG. 3. THE DOME AND PIT, NORTH-SOUTH SECTION

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and that within the comparatively narrow range of 11 to 16 inches 70 interspaces, representing 68.6 per cent. of the series is concentrated. The average length of the 70 interspaces is 13.4 inches. The average length of the whole of the interspaces except the two large gaps, 100 in all, is 15.5 inches. Both these figures are paralleled in the stake circles of the adjacent barrows. One quadrant of the only circle in Sheeplays 279' was examined; the interspaces averaged 13.3 inches. A long series of interspaces of each of three circles in Sheeplays 293' was measured; they averaged 15.6, 15.3 and 16.0 inches respectively.⁸

We can only suppose that, as was suggested in the paper from which these related facts are taken, some standard system (or systems) of wattling or interlacement which provided for a given number of verticals in a given length of construction was employed by the folk living in this district in the Bronze Age.

It was expected that evidence of the decayed posts would, on the analogy of the barrow Sheeplays 293', be found in the overlying turf mound; and that since the mound was over six feet high valuable evidence as to the character and height of these fences would be obtained. No such features were present, no stake-hole being found until excavation had been carried close to, or into the ancient surface.

I have said 'close to': for evidence was obtained in the case of three stake-holes widely spaced in the south-eastern quadrant that the stakes were, at the time of the construction of the barrow, some 3 inches high, i.e. above the original ground level. PLATE I, B, shows one of the stake-holes, the ground level being shown by an arrow. The hole ended abruptly and there was no trace of a post in the barrow material above it. Another such hole is described on p. 150. We know that some of the stakes were drawn before the barrow was built; the rest, it would appear, were no more than 3-4 inches high when they were covered up. Two explanations are possible; either the fence formed by the stakes was never any higher than this, being a warning against, rather than a preventive of, trespass on a sacred area, or those stakes which for some reason unknown, were left in the ground when the barrow was built, were sawn off.⁹ They would certainly have got in the way of the barrow-building, as they did in barrow 293' at Sheeplays.

Before passing on to the next section, it should be stated that there

⁸ See *Antiq. Journ.*, loc. cit., pp. 101 ff. and 117, where these stake circles are discussed.

⁹ A not impossible operation, for bronze saws are known in the Late Bronze Age, and flint saws preceded these.

DATEABLE 'RITUAL BARROW' IN GLAMORGANSHIRE

is no possibility of a second circle having been present within the fifty-foot circle. The floors of the four quadrant trenches and of the central area, were examined with negative results.

THE CREMATION BURIAL

The continuity of the stake circle was broken at one point in a remarkable manner. A pile of stone soon recognizable as a cist (PLATE III, A) was encountered on the line of that circle south-southeast of the 'ritual pit'. It is superficially of a common Bronze Age character and

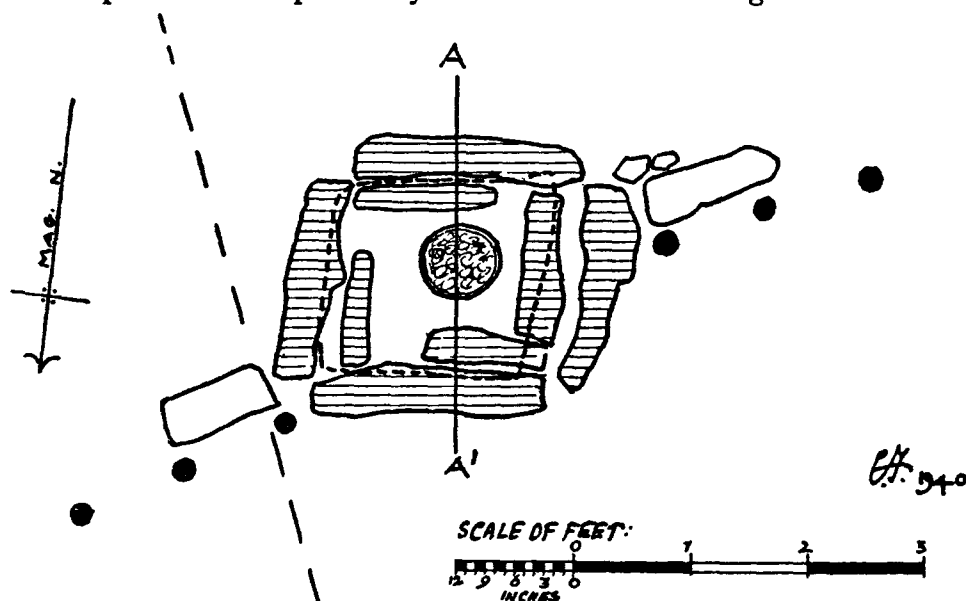


FIG. 4. THE CIST: PLAN

size, consisting fundamentally of four slabby orthostats with a similar stone atop—a stone box with a cover, the stones being of the local limestone. Its minor characteristics are, however, peculiar. It is diamond-shaped, not rectangular; each of the points of the longer axis is extended by a long rectangular stone, and three rounded boulders crown the structure. On the removal of these, and the cover, the orthostatic slabs are seen to be duplicated, in a manner which lessens the area within as well as (on one side) extending it without (PLATE III, B).¹⁰

¹⁰ One inner slab, which extended diagonally downwards from the upper corner on the photograph, was removed before this was taken.

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Further investigation showed that the cist was unstable and ill-constructed and the duplication of its sides mainly intended for mutual support. The two western orthostats were long narrow slabs, the inner only 6.5 inches deep and the outer 11 inches. The only well-bedded stone was the southern orthostat which had a pointed base and was 19 inches in depth.

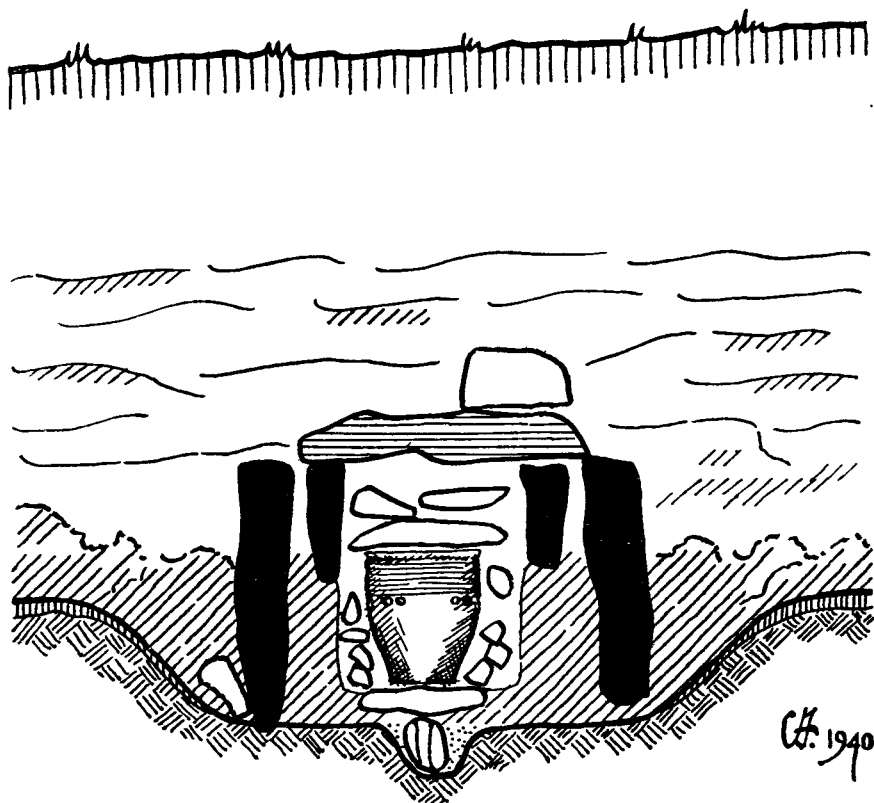
The cist was constructed in the following manner, illustrated in FIG. 5. A broad shallow hole with sloping sides having been made, the stones forming the sides of the cist were wedged up with or bedded in clayey soil of the same character as that used in the barrow generally. This layer extended round the cist to a height of some 3 inches above the ancient ground level, and on it the flat stones projecting at either end of the long axis of the structure were laid.

The relation of this cist structure (which measured 2 feet 4 inches across and, with its extensions, 5 feet 8 inches in length) to the stake circle is intimate; its long axis is parallel to the line of stakes, and the placing of the extensions is particularly significant. The axis of the cist, be it noted, is definitely outside the circle. All these points are illustrated in a photograph (PLATE IV, A)¹¹ and in a plan (FIG. 4).

The lay-out, then, conveys an intellectual assurance that cist and stake circle form one design. We can supplement this by direct proof. We know that the cist was present when the turf-barrow was built, for the line of the turves across it was seen to be unbroken (FIGS. 5 and 7 and p. 156); and a further piece of evidence shows that the order of construction was first the circle, then the cist.

Half hidden under a spur-stone beside the upper left-hand corner of the cist in PLATE III, A is a small piece of lias whiter than the rest. The under surface of this is 3-4 inches above the natural ground level. On removal it was found to form, as it were, a lid to a stake-hole 2 inches in diameter. It must indeed have originally been resting on—supported by—the flat top of the stake which formerly occupied the hole; for since the upper 3-4 inches of the hole was in 'made' ground, this hole could hardly have remained open unless the stake was in it while this ground was consolidating. The hole, being on the line of the north-south trench, is recorded in section in FIG. 7, and it is the third from the left in the plan (FIG. 4).

¹¹ For this photograph the lid was replaced on the cist. It was taken some days later than the others, when the whole area had been cleared to ground level and the stake-holes revealed. The Lias limestone dries out white; hence the strong contrast between the structure and the soil.



SYMBOLS:

- | | | | | | |
|--|-----------------------|--|-----------------------------|--|----------------|
| | ORTHOSTAT | | COVER-STONE | | OTHER STONES |
| | PRESENT SURFACE | | UNDISTURBED SUBSOIL | | TURF |
| | CLAYEY BASE OF BARROW | | HARD-PAN ON FLOOR OF BARROW | | EARTHY DEPOSIT |

FIG. 5. THE CIST: SECTION A-A' ON PLAN

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Reference was made on p. 148 to the evidence for short, or shortened, stakes in the circle ; here incidentally is the best example of all. From our present point of view the discovery indicates not only that the cist was constructed after the adjacent sector of the stake circle, but also that this stake circle was then actually present and undecayed. On the other hand, the fact that several stakes were set within the margin of the large shallow basin excavated before the construction of the cist (p. 150) shows that the cist was taken into consideration in the original lay-out : *was in fact part of the original design.*

These things being so, the contents of the cist, in so far as they are datable, will enable us to place ritual barrows of the Six Wells 267' and 271' class more exactly in the cultural sequence of the Bronze Age than was possible when the former was described. These contents will now be considered. Under the cover of the cist, in the centre, a flat stone was seen ; this formed the lid to an urn filled with burnt bones which in consequence was shattered by pressure. PLATE III, B was taken immediately on exposure ; the rim of the urn is seen to be cracked. On clearing the cist the urn was found to have been placed on another flat stone over a small hole in the natural subsoil in which a Lias pebble had been placed (see section, FIG. 5), and Lias stones were packed round it.¹²

There was no charcoal in or near the cist ; and the most careful search through the burnt bones in the urn (which were quite clean), resulted in the collection of four small pieces only. My colleague, Mr L. F. Cowley, who has kindly examined the bones, reports that :

'The material was fragmentary and yielded but little evidence of value. That it represents but one person I have no doubt since there was no duplication of parts. A portion of the head of a humerus together with a small portion of the shaft of the bone showed no signs of lack of fusion ; the person must therefore have been over 20 years of age. As to sex I am not certain, but the piece of humerus mentioned above and a portion of the mastoid process of the left temporal bone by their size suggested that they belonged to a male '.

THE URN

The urn was rebuilt in the Department of Archaeology of the National Museum of Wales. The fragments were very soft when

¹² The fine earth which fills the cist in the photograph gained entrance through the many holes and cracks in the structure. The placing of flat stones above and below the urn is a not unusual Bronze Age technique in South Wales. cf. *Arch. Camb.*, 1936, pp. 116-17, and *Procs. Soc. Ant.*, 2 s., vol. II, p. 431, describing the Golden Mile Barrow, Colwinston, Glam., where the practice dates from c. 700 B.C.



A. DOME OF THE "RITUAL PIT", HALF CUT AWAY, FROM THE SOUTHWEST (see p. 143)
Ph. National Museum of Wales

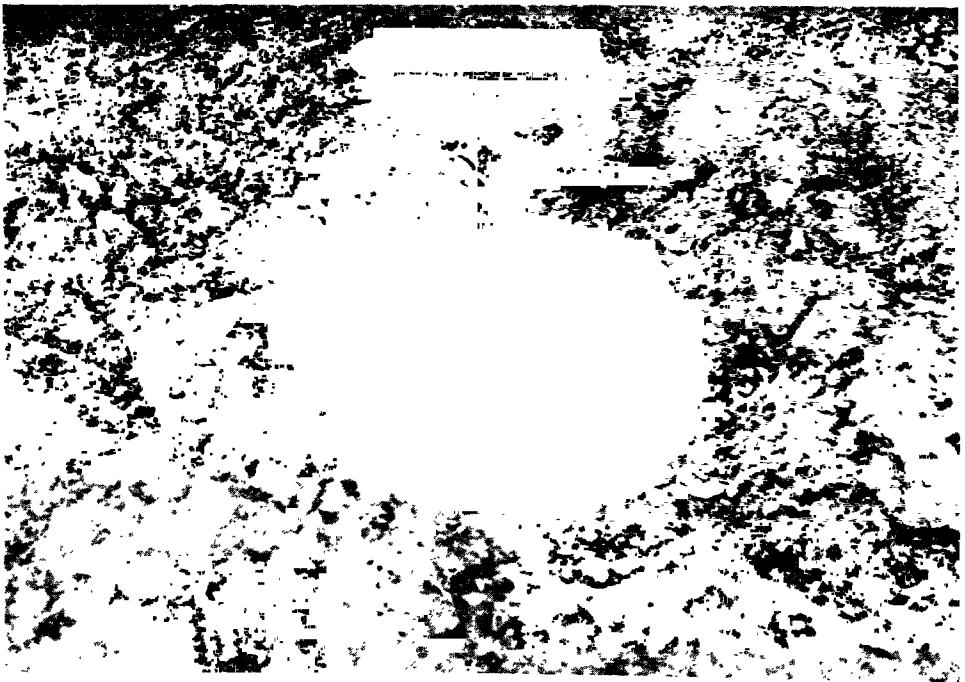


B. STAKE-HOLE IN THE BARROW, 3 INCHES ABOVE GROUND-LEVEL, AND 2½ INCHES
 IN DIAMETER (see p. 148)
Ph. National Museum of Wales

PLATE II



A. DOME OF THE "RITUAL PIT" PARTLY CLEARED AWAY, SHOWING ITS "SHIELD" FITTING OF PIT BENEATH PARTLY REMOVED. FROM THE WEST (see p. 143).
Phot. National Museum of Wales



B. THE "RITUAL PIT" CLEARED, AND ADJACENT HOLLOW, FROM THE SOUTH (see p. 144).
Phot. National Museum of Wales

PLATE III



A THE CIST, UNTOUCHED, FROM THE WEST

(see p. 149)

Ph. National Museum of Wales



B THE CIST WITH LID REMOVED, SHOWING URN WITH BURNT BONES

The top of the photograph is north-east

(see p. 150)

Ph. National Museum of Wales

PLATE IV



A. THE CIST WITH LID REPLACED, SHOWING ITS EXTENSIONS AND ITS RELATION TO THE STAKE CIRCLE (MARKED BY PEGS) FROM THE NORTHEAST. (see p. 150)
Pl. National Museum of Wales



B. THE URN FROM THE CIST, RECONSTRUCTED THE ORIGINAL CONTOURS OF THE BODY WERE PROBABLY MORE CONVEX.
Height 9 inches. (see pp. 152-3)
Pl. National Museum of Wales



C. AN URN FROM FFOWORTHY, SOMERSET.
Height 9½ inches. (see p. 151)
Pl. H. St. George Grey

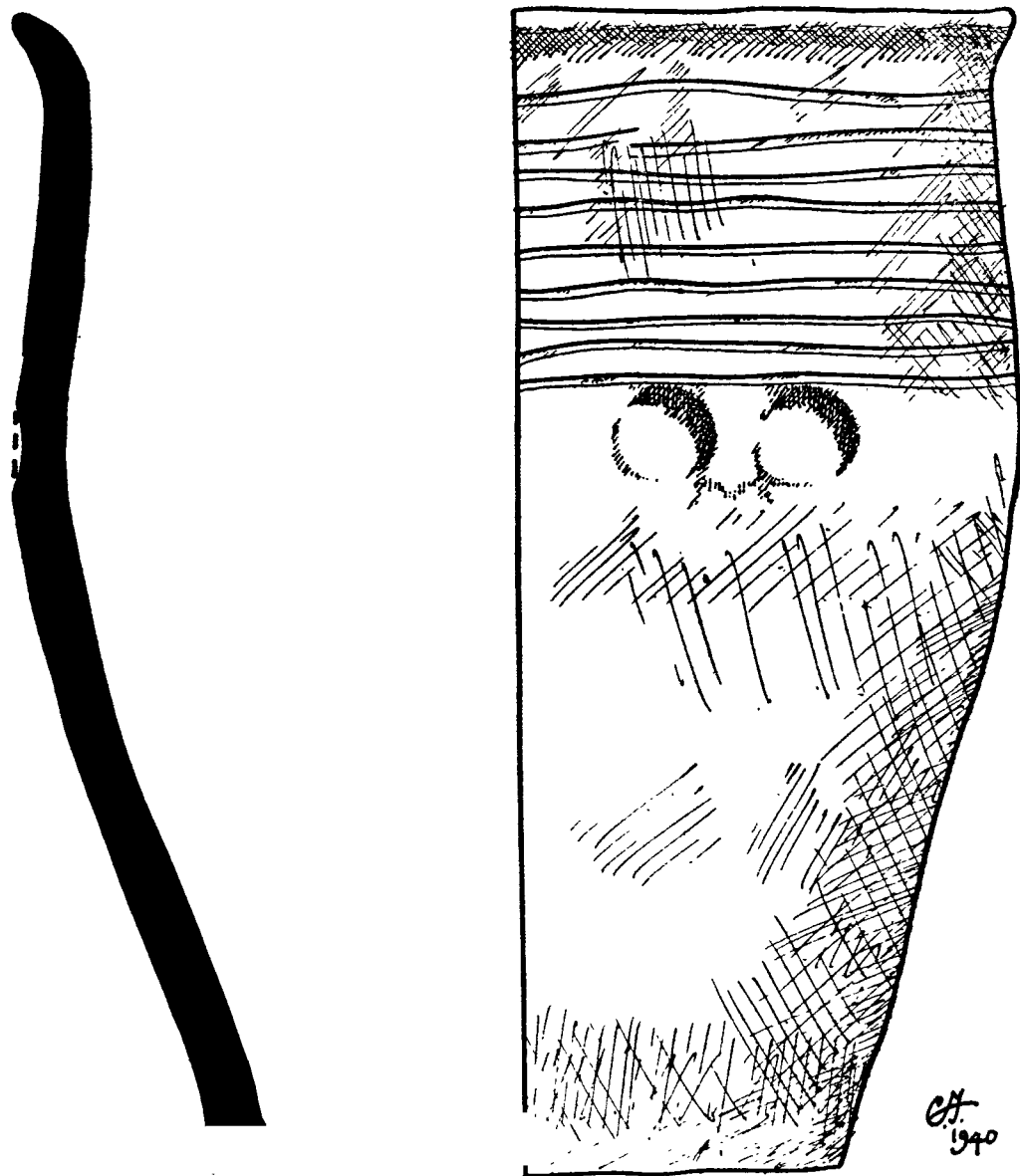


FIG. 6. THE URN. THE FULL CURVE OF THE BODY SHOWN ON THE LEFT REPRESENTS THE PROBABLE ORIGINAL FORM OF THE (RECONSTRUCTED) VESSEL.

Scale (3)

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excavated, and had warped under pressure ; the sectional portion of the drawing (FIG. 6) more accurately represents its original outline than the photograph (PLATE IV, B). The urn proves to be just over 9 inches in height, a stocky vessel weakly caliciform, with a flared rim well formed in places, elsewhere irregular. The ill-baked ware, of native Bronze Age character, is gritty but the grits are small. The vessel is on the surface brownish-red to greyish-yellow with ill-defined blackish patches : the core is dead black. The wall is of equal thickness from rim to base. The decoration consists of a series of horizontal smooth-floored grooves firmly drawn with a blunt point of wood or bone, extending from below the rim to the bulge. Round the bulge are four pairs of dimples spaced at equal intervals. These are carefully moulded and do not show on the inside.

The urn is undoubtedly of a rare type. Prolonged search through the literature has disclosed one close parallel only, a cinerary found 'in the Winter of 1834-5' in a barrow in the parish of Elworthy, Somerset, on the east slopes of the Brendon Hills, adjoining the coast of the Bristol Channel opposite our group of barrows. This urn is of the same shape and height and has four pairs of dimples ; it has similar grooved decoration, somewhat coarser and more varied, with chevron patterns as well as horizontal lines. The record states that 'the burial place contained a circle of upright stones, about six feet in diameter, and three feet high. On one side was a square cavity, about fifteen inches in diameter, enclosed with flat stones, containing this urn, with fragments and ashes of burnt bones. There were also pieces of another urn'.¹³

The Elworthy urn (PLATE IV, C) has features which reveal its affiliations. The paired dimples show a well-marked intervening ridge ; such a ridge, at a slightly earlier stage of evolution from a pierced lug, is seen on a bucket-like urn of Rimbury type from Dorset.¹⁴ This

¹³ *Procs. Somerset Arch. and Nat. Hist. Soc.*, 1883, xxix, p. 46. The urn is illustrated in Abercromby, *Bronze Age Pottery*, II, no. 464, and, with the fragment of the other urn, is preserved at Taunton Museum. Mr St. George Gray, in addition to his gift of the photo reproduced in pl. IV, has kindly sent me a drawing of the fragment ; it is probably from a lugged or loop-handled urn of Late Bronze Age (southwestern) type.

¹⁴ Abercromby, *B.A.P.*, II, 456 c. The Elworthy urn is included in Mr Christopher Hawkes' 'List of Deverel-Rimbury Urns' in *Antiq. Journ.*, 1933, p. 451. Mr Stuart Piggott kindly informs me that he has obtained from a barrow on Crichel Down near Blandford, an L.B.A. bucket urn with 'just the same very vestigial lugs' as the Six Wells urn shows.

DATALE 'RITUAL BARROW' IN GLAMORGANSHIRE

indication of cultural relationship is rendered certain by another detail of the ornament—the convergence of the horizontal grooves on what we may now call the 'vestigial lugs'. This commonly occurs on globular urns of the Deverel group.¹⁵ Grooved decoration in general and chevron patterns are moreover normal to the Deverel-Rimbury wares and their derivatives.

This analysis will suggest that devolution has proceeded further in the case of our Six Wells urn than at Elworthy. This is to be expected: for there is ample evidence that throughout the prehistoric periods cultural trends were from south to north across the Bristol Channel and not in the opposite direction. Since then, the date of the Deverel-Rimbury irruption into southern Britain can be safely dated at c. 750 B.C., the Six Wells urn can hardly be earlier than 600 B.C.¹⁶

The one feature needed to demonstrate the essential identity of this Somerset culture with that at Six Wells is of course the 'ritual pit'. This is supplied in a record of a barrow, also on the Brendon Hills, which was, like our barrows, composed of turf, and which revealed within a 'peristalith' about 10 feet in diameter (a stone circle, C.F.), a hole 2 feet deep and 1½ feet wide containing no human remains.¹⁷

THE BARROW

The Barrow is of the class known as turf barrows. It was thrown up at one time, and presents no feature warranting detailed archaeological description—though its geological character, as my colleague Dr F. J. North shows (Appendix, p. 160), provides interesting data bearing on the sources of its material and on the original condition of the site. There is more pure clay in its structure than in the other turf barrows in its group.¹⁸ A mass of such clay formed the base

¹⁵ e.g. Abercromby, II, 389 c, and 403, both from Dorset. cf. a vessel of somewhat earlier date, from Sussex; *Procs. Prehist. Soc.*, 1935, p. 42.

¹⁶ Flared rims of the Elworthy-Six Wells type are certainly not a normal feature of Deverel-Rimbury urns or their native derivatives in Britain, but examples can be found—e.g. in Dorset, associated with a Deverel-Rimbury urn, Abercromby, op. cit. 400 b. A bucket-shaped urn from a cist at Fowey, Cornwall, illustrated in Hencken, *Cornwall and Scilly*, pl. VIII, 3, and Abercromby, 463, is probably a close relative.

I am much indebted to many friends who have helped me with the problem of the Six Wells urn; Miss Florence Patchett and Mr Christopher Hawkes have kindly provided me with much comparative material, and the investigation has confirmed views expressed by Professor Gordon Childe, Mr Stuart Piggott, and Mr Raleigh Radford.

¹⁷ *Procs. Som. Arch. and Nat. Hist. Soc.*, 1896, XLII, pp. 22-3.

¹⁸ *Antiq. Journ.*, loc. cit., pp. 99 f., 105 f., 119 and pl. XXIX.

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of the mound in an area which included the central deposit (FIG. 7), but which was for the most part confined to the northwestern half of the barrow. Elsewhere the lumps and patches of clay were so inter-laced with turfy material and so irregular in their incidence that the distribution of clay cannot be regarded as structurally significant. In general, the regularity of the turfy layers with thin bands of clay on their undersides was striking; after rain one could measure the thickness of these layers (3 to 6 or 8 inches) with ease. The barrow was never constructed as a turf-*stack*; nowhere was a vertical face or a steep slope of turf, seen. In this respect it resembled the other 'ritual barrow' 267' and differed from the two Sheeplays burial-mounds 279' and 293'. Thus the structure tended to fade out at the margins, and determination of its actual limits was difficult. When wet weather had intensified colour-contrasts, and enabled these limits to be fixed, one could not be sure whether they represented the original barrow edge, or a 'spread'¹⁹ subsequent to construction due to a hypothetical instability of the structure. I have assumed the former to be correct (since no means exist of proving the 'spread' or determining its extent), and am probably right in so doing, for the actual limits of the barrow provide a remarkably close approximation to a true circle. The figures are 87.6 feet in NE-SW diameter, and 90.0 feet in NW-SE diameter (see Plan). The centre of the barrow, as of the stake circle, is the 'ritual pit'.

Hard-pan was very much in evidence. It covered practically the whole of the floor of the barrow (in so far as it was excavated) except the central area which has already been described; here, descending steeply, it merged into the orange clay (p. 143 f.). The level 'pavement' of hard-pan usually met with in turf barrows was seldom seen. The floor layer rose in hummocks and then dipped into pits and holes and faded out; thin bands were also seen above and near the ancient surface. Contorted layers of hard-pan, moreover, were found in the body of the mound, in and on the clay masses (as in FIG. 3). Only on the margins of the mound was hard-pan on the floor consistently even. These features are indicated in the Sections, in which however I cannot hope to convey any adequate idea of the fantastic detail of form, let alone colour, produced after some 2500 years in (and under) a well-consolidated dump of turf and clay. 'Straight' photography fails to demonstrate the pattern; the wall of the north-south trench with the

¹⁹ I am of course not concerned with the 'spread' of the mound due to ploughing, which is extensive and measurable, but of no importance.

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clay becoming streaky after rain, and with deep rabbit buries above, is seen in PLATE I, A.

THE STRUCTURE AND THE RITUAL

Mr Christopher Hawkes has stressed the importance of the native influence on the Deverel-Rimbury immigrants and suggests that many features of their ceramic in southern Britain, for which continental parallels are not easily found, should be attributed to the western megalithic culture.²⁰ While, therefore, one may regard such an everted-rim urn as that figured by Abercromby²¹ from Crozon, at the tip of the Brittany peninsula, as a valuable hint as to the proximate continental source of the Elworthy-Six Wells urn-type, we can reasonably regard these vases themselves (of which one was certainly made on the spot, within the Highland Zone) as insular variants. We can be still more definite about the turf and stone-ringed barrows on the Brendon Hills, whose Middle Bronze Age A descent in this country is demonstrable. We are moreover fortunately able to prove that domed pit, turf barrow, and stake circle traditions were many centuries old on the Llantwit Major plateau when our ritual barrow was constructed.²² In short, we are dealing with a foreign fashion in pottery, utilized on both sides of the Bristol Channel in structures of traditional forms.

The Six Wells 271' barrow has it is true, decadent features—the mound is a mere heap and the cist is incompetently built; nevertheless the interesting and important fact stands, that a Bronze Age culture on the sea plain of Glamorgan existed substantially unaltered, in such of its techniques as we can study, for not less than 400 and probably as much as 700 years.

Whether the '*ritual*' is of the same antiquity we cannot say; but since traditional structural forms and techniques were used for it without essential modification, it is hardly likely to have been introduced in 700–600 B.C. Let us, then, study this '*ritual*', first reminding ourselves of the essentials of the problem.

A small hole containing no artefacts, and which therefore is regarded as a '*ritual pit*', was domed over with clay and earth. It was surrounded by a small area wherefrom the ancient surface soil was removed, and

²⁰ Preston and Hawkes, 'Three L.B.A. barrows on the Cloven Way'. *Antiq. Journ.*, 1933, especially pp. 438–9.

²¹ *op. cit.* pl. CVII, no. 21.

²² Domed pit, at Breach Farm barrow, c. 1600 B.C. Turf barrow, and stake circles, Sheeplays 293', c. 1300 B.C.

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by a larger area which had not been trodden. This tiny construction was the exact centre of a stake circle 50 feet in diameter, and was almost certainly also the exact centre of a barrow 90 feet in diameter. It was therefore the cause of, and reason for, these constructions.

There was a primary burial in the mound, by cremation, in an urn within a cist, of an adult, probably a male. The cist was so designed as to emphasize its structural relation to the stake circle (with which it was contemporary); it was, however, outside the circle. These are pregnant facts; we receive unexpected and welcome evidence that the stake circle was in effect the precinct wall of a shrine or sanctuary; burial would pollute an area 'occult, withheld, untrod', and could not be permitted. A votary, marginally interred, might however expect favour from the Power to whom the pit was dedicate, or with whom contact was established by libations, food-offerings, or other ritual centred on the pit. Here we reach the core of the problem presented by our Barrow.

It is, in a sense, impossible to penetrate the mind of Bronze Age Man in Britain, and thus, in this particular instance, to know what impelled him to so laborious a creation as barrow 271'; to determine what was the concept behind the ritual; what was the ritual itself which dictated this material form. But there is one European people who were literate, artistic, and introspective, at a time when they still retained a mass of custom and ritual from their Bronze Age past—the Greeks. And it is not difficult to find clues to our problem in their literature and art. 'The chthonic gods', says Philostratos, 'welcome trenches and ceremonies done in the hollow earth'.²³ Pausanias, giving an account of the ceremonies performed at Titane to soothe the winds, states that the priest does secret ceremonies into four pits. 'Each of the four winds', commented Miss Jane Harrison, 'dwelt, it is clear, as a chthonic power in a pit'.²⁴ The same ideas were shared by the Romans: 'when the *mundus* (the round pit on the Palatine) is open, the gate of the doleful underworld gods is open'.²⁵

That the same sort of hole and, like it, domed, was made for a dead man in an adjacent barrow, Sheeplays 293',²⁶ as for the (presumed)

²³ This and the following extracts and comments, are derived from J. E. Harrison, *Prolegomena to the Study of Greek Religion*, 2nd ed., 1908. The present reference is to p. 125.

²⁴ op. cit. p. 68. *Τιτανη* was a town in the Peloponnese (in Sicyonia).

²⁵ Varro: see Harrison, op. cit. p. 47.

²⁶ *Antiq. Journ.*, 1941, pl. xixa.

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ritual acts in our barrow 271', need not surprise us. Ghosts (spirits of the dead), in the evolution of primitive concepts, become gods or goddesses²⁷; the line is hard to draw between them. But that there should be a barrow over a ritual pit, as over a tomb, is harder to understand. It is true that an artificial earth-mound, as representing the home of the earth goddess, commonly occurs in the art of the Greek vase-painter,²⁸ but I think the explanation of our mound lies elsewhere. We may, at this stage in our enquiry, be content to affirm it as probable that the 'ritual pit' in barrow 271' was a vehicle whereby a chthonic Power was approached, consulted or appeased. One may further emphasize the classical parallel by stating that we may have here a barbarous version of the sanctuary with its τέμενος; but the classical analogies, though relevant, must not be pressed too far. The peculiar feature of our shrine is its ephemeral character. The care taken over the burial of the adult in the cist shows him to have been a person of importance, not a dedicatory sacrifice,²⁹ and the construction of his tomb was, as we know, contemporary with the construction of the circle. Now it is safe to affirm, on general principles, that definition of a sacred area must either precede or be contemporaneous with, the hallowing of the site; were it later, the risk of pollution by involuntary trespass would arise. Contact with the Power in the pit, then, is likely to have been sought and achieved on the death of the individual in question. Furthermore, the holy place with the τέμενος necessarily ceased to function when the barrow was built, and this took place, as has been shown, very quickly after the burial. We observe, then, that a month or so might well cover its actual existence.

All this has a bearing on the fact of the mound. It may provisionally be regarded not as the pure expression of a cult of the underworld Power, but as an intrusion of the principle that a barrow was a covering proper to the dead. The barrow was, however, centred on the shrine, not on the burial.

The floor of barrow 271' may then be not a sacred site of a tribe, but a secular plot of ground whereon priests or shamans, on behalf of an important local family with over-estuary connexions, who had suffered bereavement, performed ritual acts by virtue of which contact

²⁷ Harrison, op. cit. p. 240. cf. J. L. Myres' *Who were the Greeks?*, p. 191, para. 3.

²⁸ Harrison, op. cit. figs. 68-9, pp. 277-8.

²⁹ We know what a dedicatory sacrifice among the Middle Bronze Age folk in South Wales was like; burnt bones thrown into a stony pit. See *Archaeologia*, LXXXVII, pp. 144-5 (Pond Cairn, Bridgend).

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was obtained with an underworld Power, and a place provided for the ashes of the dead in the shadow of Its presence³⁰.

The issue may now be broadened. The striking and dramatic importance of the lay-out in barrow 271' is that we see the Dead Man ousted from the central and dominant position which we have good reason to believe he held in the earlier (megalithic) religion of the Highland Zone. Whatever authority the man whose sepulture we have studied may have wielded during life, in death he was a suppliant. The concept involved in the worship of the dead is here visibly overthrown.

Lastly, there is one correlation, a by-product of our survey, which invites more precise expression. The record of the Elworthy barrow, reinforced (where information is lacking) by that of the Brendon Hills barrow, suggests the presence, on the other side of the Bristol Channel, of a ritual structure similar in plan to that in our barrow, the urn being deposited in a cist 'on one side of' a circle of stones, as our urn was in a cist marginal to a circle of stakes. This apparent identity of function of sacred structures of stone and of wood has familiar parallels, and it increases the interest of the field of inquiry which is initiated by the excavation of Six Wells 271'.

APPENDIX

GEOLOGICAL FEATURES OF BARROW SIX WELLS 271'

by Dr F. J. NORTH, F.G.S.

The material of the barrow includes four principal types :* (a) turf ; (b) yellowish brown loam and clay representing normal local soil and subsoil ; (c) homogeneous grey clay, and (d) grey clay in patches associated with stony brownish loam—described on page 156 as lumps and patches of clay interlaced with turfy material.

Materials of types (c) and (d) make up most of the core of the mound, the homogeneous grey clay being in greatest abundance towards the north and the patchy grey clay towards the south. These were covered and surrounded by the yellowish brown loamy clay and turf, but apart from this there was no well-defined stratification of the material, except for the regularity of the turf layers themselves.

³⁰ The classical parallel I have adduced has been applied before, but from a different angle, and not to elaborate structures such as Six Wells 267' and 271'. See e.g. Thurnam, *Arch.* xlii, p. 181, with reference to holes under long barrows, and Mr G. M. Young, *ANTIQUITY*, 1934, pp. 459-61, with reference to the circular hollows, mis-called 'Pond Barrows', found adjacent to barrow groups in Wiltshire.

* The methods of examining materials of this description will be described in an appendix to a forthcoming paper, in *Archaeologia*, lxxxix, on another barrow of the group : Sutton 268'.

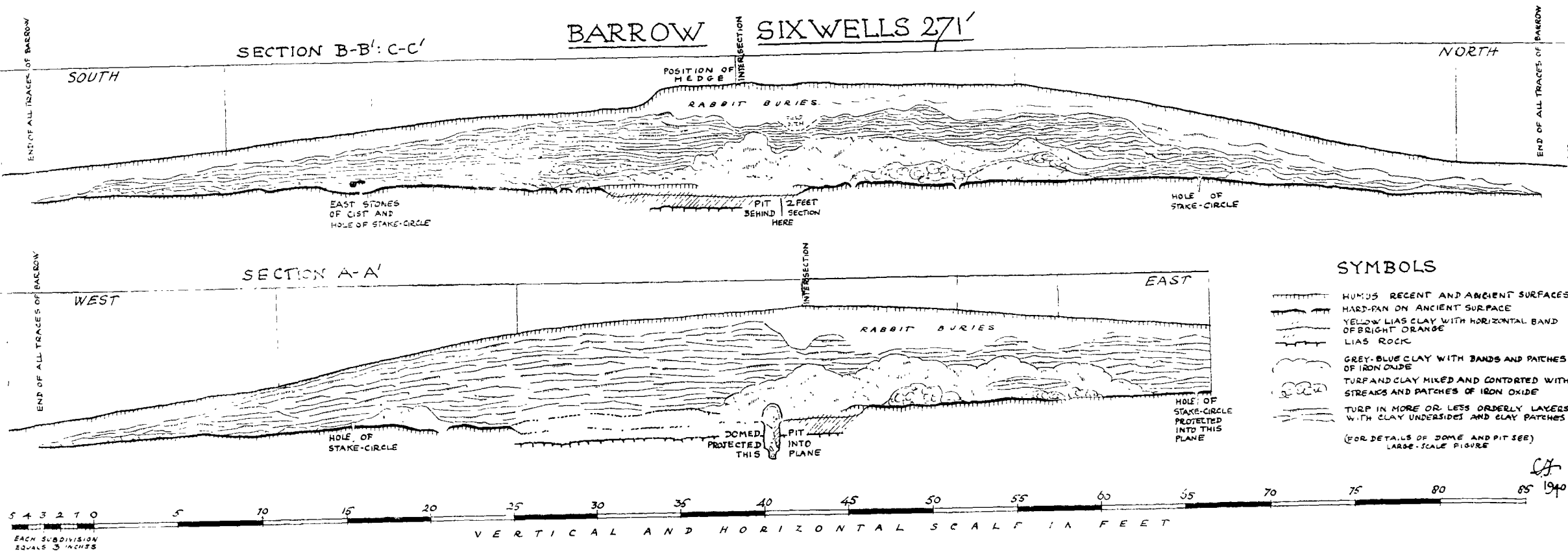


FIG. 7. SECTIONS OF BARROW

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All these materials were obtained from the surface layers of the immediate vicinity, and their distribution indicates that the work was carried out with the least possible amount of transport. The grey clay suggests a deposit from a swampy hollow where sediments accumulated under chemically reducing conditions, and the existence and present conditions of a ditch by the side of the road just northwards of the site (where the lowest ground of the immediate vicinity occurs) sufficiently indicates the reason why this clay is most abundant in the northern part of the barrow. The homogeneous appearance of the grey clay mass is due to the fact that the material was damp and plastic when dug, and was quickly excavated and dumped.

The jumbled character of the mixture of grey clay and stony loam was more apparent than real, for this part of the barrow was made up of masses consisting almost always of a layer of greyish clay below with brownish stony loam above, although in a few instances this order was reversed and the clay was uppermost. As exposed in section each portion of the grey clay formed a sort of shallow basin in which the other material rested (except when the clay was uppermost), and the whole had the appearance of being built up from small pillow-like lumps, nearly all of which had been added to the pile with the grey clay layer downwards; this layer, being soft and plastic, tended to accommodate itself to the irregularity of the surface upon which it rested. This material was obtained from the margin of the grey clay area, and just southwards of it, where the surface layers included soil and the stones left after some of the finer material of the clay had been washed away by rain or surface waters.

The turf, soil, and loamy subsoil above and around the clayey core differed in no essential way from the material of the normal soil profile in the neighbourhood of the barrow.

The variegated appearance of the material, due to the presence of layers of bright yellow, orange, and reddish brown layers rich in compounds of iron, and sometimes indurated by them, is an indication of the extent to which the soluble mineral constituents of the mound have been re-distributed.

The Beginnings of Civilization in Mesopotamia*

by E. A. SPEISER

University of Pennsylvania

IN attempting an analysis of so composite a problem as the beginnings of civilization in Mesopotamia, I shall treat the subject under three heads: material elements; social elements; the underlying ethnic forces.

MATERIAL ELEMENTS

Our knowledge of predynastic, or proto-historic, Mesopotamia is almost entirely a contribution of the present decade. At the Eighteenth International Congress of Orientalists, held in Leiden in 1931, three archaic stages were established for Lower Mesopotamia. They are, working back from recorded dynastic times,

1. The Jemdet Nasr period
2. The Uruk period
3. The Obeid period.

These divisions as they are generally understood, are at once cultural and chronological. They follow in a definite order, without intervening gaps, and each contains certain characteristic material elements which were first observed on the site that has given its name to the culture in question. The beginning of the Early Dynastic period may now be dated to about 3000 B.C.,¹ with a much smaller margin of error than the round date might imply. Since the three predynastic stages

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¹ See H. Frankfort, *Orient. Inst. Comm.* 20 (1936), Comment on the Chronological Table (after pl. VIII). A useful survey of the protohistoric material will be found in Viktor Christian's *Alttertumskunde des Zweistromlandes* I, fasc. 2 (1938), although Christian's dates are at times highly individual. See also Th. J. Meek, in *The Haverford Symposium on Archaeology and the Bible* (1938), 158 ff.

BEGINNINGS OF CIVILIZATION IN MESOPOTAMIA

are represented by a total of nearly twenty building levels,² the time assigned to the age as a whole could scarcely be less than the entire fourth millennium. The chronology is relative, of course, since much of the age under discussion belongs to the preliterate era. But this relative chronology is abundantly established, and is being constantly confirmed, by the collective testimony of a number of widely distributed ancient centres ; so much so that the terms 'Jemdet Nasr', 'Uruk', and 'Obeid' have been adopted for Upper Mesopotamia as well, and they are employed in a restricted sense for other sections of Western Asia, notably Persia, Syria, and Palestine.

Upper Mesopotamia was inhabited long before the alluvial valley of the south had become suitable for human occupation. Whereas the oldest established civilization of Lower Mesopotamia was the one known as 'Obeid', separated by two other cultures from the Early Dynastic stage, ancient Assyria has yielded at least two additional stages :—

4. The Halaf-Samarra period
5. The Sakjegözü, or Neolithic period.

The last-named stage takes us back, even on conservative estimates, well into the fifth millennium.

For our present purposes, the internal characteristics of each of the above five predynastic periods are immaterial. Their distinguishing features may be ascertained from several general summaries³ or, better still, from the original reports on the various excavations in question. Nor need we dwell on the principal accomplishments of the predynastic age as a whole, beyond indicating that the beginnings of building and pottery lie still farther behind,⁴ but that the introduction of metal, the wheel, the cylinder seal, and writing fall within the predynastic age of Mesopotamia. It will be of more immediate concern to us to concentrate instead on correlations of a methodological and general anthropological nature. These correlations will be stated briefly in the succeeding paragraphs.

² e.g. Uruk, archaic II-XVIII.

³ See above, note 1.

⁴ That is to say, they are earlier than the deepest stratified deposits known from Mesopotamia. The stage in question has been reported from J. Garstang's excavations at Jericho, and may be anticipated from his discoveries at Mersin.

In grouping together the Halaf and Samarra deposits I have had in mind only their relative chronology. On contextual grounds Samarra proves to be an early phase of the Obeid-Susa I group.

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A. First there is a question as to the nature of the divisions into which predynastic Mesopotamia has been broken up. The terms currently in use to designate those divisions were first applied to strictly localized remains which enjoyed prominence over a limited period of time. Thus 'Obeid' was applied originally to a highly specialized type of painted pottery which was confined to a section of Lower Mesopotamia, and flourished until the appearance in the same region of pottery without painted designs. Secondly, the term was applied also to the material context with which Obeid pottery occurred. In this manner one designation served for a characteristic product, a period, and a cultural context. It was adequate so long as the early civilization which it was meant to signify appeared to remain in comparative isolation. But the one conclusion towards which all recent archaeological discoveries and researches in Western Asia converge is that even the oldest civilizations of that area were not narrowly localized. Obeid pottery and terracottas are now known also from Upper Mesopotamia, while Obeid decorative motives have correspondences with designs on pottery of the Amri stage, in the Indus Valley, too intricate to be explained away by mere coincidence. If we extend the term 'Obeid' to cover Upper Mesopotamia, we shall find it awkward and misleading when applied to a substantial residue of northern remains, including pottery, which have no counterpart in the south. In such circumstances the label in question could be justified only for chronological purposes. 'Obeid' would designate a period characterized by a sum of material remains varying in origin and relationship. For a single group of material remains is often insufficient to establish synchronism. The suggested decorative correspondences between Obeid and Amri may point indeed to a common source, but reflect widely separated periods, because the Amri stage is much later than Obeid proper. Careful distinction must be made, therefore, between cultural synchronism and parallels from different periods. The Obeidoid material from the Indus Valley⁵ seems to indicate a late survival from a common source.

B. We come back now to the material contents of the five predynastic stages of Mesopotamia. It has been indicated that in Upper Mesopotamia products from the Obeid province in the south mingled with others which were restricted to the north. For instance, the graceful beakers from Gawra 13 do not occur in Obeid proper. They have,

⁵ I would compare, for example, the motives published by N. G. Majumdar in *Mem. of the Arch. Survey of India* 48 (1934), pl. xxxviii, 1-8 (called to my attention by Dr Marian Welker) with Gawra XIII; see provisionally BASOR 66, 11.

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however, their analogues in the tumblers from Susa I. On the other hand, Gawra and Obeid share a number of designs which do not occur in Susa. Correlation of the remains from the above three areas, Upper and Lower Mesopotamia and Elam, indicates an underlying relationship among the three which is less apparent when only two of these regions are compared. We now see that the treatment of the human figure was the same in all three provinces. The terracotta figurines from contemporary Ur have the same animal heads as the incised figures on the seals from Gawra and the painted figures on the pottery from Susa.⁶ The obvious mastery of the artist over his medium, whether it was clay, stone, or paint, shows clearly that the distortion of the head was intentional. The human representations in question had in each instance a magic significance. The correspondence between the respective cultures embraces thus art and religion as well as industry. There is here a deeper unity that outweighs existing material differences. But these differences cannot be ignored.⁷ At Gawra, for example, the designs on the pottery of the Obeid period point in many directions. There are here survivals from earlier stages (Halaf-Samarra); elements paralleled in the south, and others which betray yet another source.⁸ The picture of a larger civilization covering a wide area is thus modified constantly by sectional peculiarities arising from differences of physical background and from local traditions and contacts. It is an ever-changing picture of expansion, interaction, and modification. In each period there is a similarity of outline, but the component elements may be heterogeneous.

c. With the realization that each age was culturally composite we begin to appreciate the danger of making this or that manifestation of the period characteristic of the entire stage. It is known, for instance, that the introduction of the cylinder seal and the consequent emergence of writing took place towards the end of Uruk times.⁹ Does this mean

⁶ For the figurines from Ur see L. Legrain, *Gazette des Beaux-Arts* Oct., 1932, p. 142; for Gawra there are stamp seals from Levels XI (post-Obeid) and XIII which show an analogous treatment of the human figure with similar distortion of the head; for Susa, cf. E. Pottier, *Mém. de la Délég. en Perse* 13 (1912), fig. 129.

⁷ For the differences between north and south which were apparent before the discovery of Gawra XIII see M. E. L. Mallowan's summary in *Excavations at Tell Arpachiyah* (1935), 70.

⁸ BASOR 66, 12.

⁹ A. Falkenstein, *Archaische Texte aus Uruk* (1936), 3. Although Uruk IVb may be assigned on internal grounds to the Jemdet Nasr period, the required stage of transition from cylinder seal to tablet makes it necessary to put the process back to the end of Uruk times.

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that the inventors of the cylinder seal were necessarily the authors of the Uruk civilization? By no means. The Uruk stage has disclosed internal differences of sufficient magnitude to call for a subdivision into Uruk A and Uruk B.¹⁰ It is therefore inherently improbable that the people of Uruk A were alone responsible for the innovations that mark Uruk B. These innovations argue, rather, the arrival of a new ethnic element. It should be noted in passing, however, that the ethnic factor is not automatically instrumental in bringing about a complete change in an established civilization. For Uruk A is not eliminated with the appearance of Uruk B. Similar co-existence of disparate cultural features, which point conclusively to more than one source, is especially noticeable in the Jemdet Nasr period.

D. We see then that the predynastic periods represent units only in a wide sense. Nor is the line of demarcation between two given periods clear and sharp. There is an appreciable overlap of Halaf and Obeid, Obeid and Uruk, and Uruk and Jemdet Nasr. This overlap imparts a flexible character even to chronological boundaries. The fact is thus emphasized that from the very beginning cultural continuity had a significant part in the shaping of Mesopotamian civilizations. New periods may have been due to combinations of economic and ethnic forces, but vital achievements of a preceding stage were also assimilated and continued. In the light of these facts early civilizations may be defined as totals of integrated cultural elements which reach their peak in time and converge in space towards a central core. There are no sharp chronological or geographical boundaries. This definition enables us to contrast adequately such successive stages as Obeid and Uruk, as well as contemporary civilizations like those of Mesopotamia and Egypt of, say, Jemdet Nasr times. When contemporary civilizations are thus contrasted, the surprising result is not that there are palpable differences between them, but rather that the respective levels of the civilizations compared are essentially similar, provided that inter-communication between them existed. Predynastic Egypt and Mesopotamia differ materially as to contents. But the tempo of progress shows no corresponding disparity. Qualitative similarities alone, as opposed to contextual relationship, cannot always be explained by the all too easy recourse to invasions. Their cause must be sought in a force of a different nature. That force is diffusion.

E. It is surely no mere coincidence that predynastic times come to an end both in Egypt and Mesopotamia at about the same period ;

¹⁰ 4. *Vorl. Bericht, Uruk* (1932), 44.

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that metal is worked in both countries in very early settlements and that metallurgical advance shows a similar rate of progress in the valleys of the Two Rivers and the Nile ; or that cylinder seals link distant areas in Jemdet Nasr times.¹¹ Diffusion presupposes, of course, physical contact, but the mechanism of diffusion functions freely in times of peace. The need of raw materials, such as obsidian and copper, stimulated commerce, and the barter of goods had as its inevitable corollary the interchange of ideas. Since there were commercial links between early Egypt and Mesopotamia, news of progress in non-negotiable items was also communicated from one region to the other.¹² In view of this it is naive to assume, as has actually been done, that plain pottery was invented in Jericho, or that painted wares originated at Tell Halaf. In most cases, the source of a significant invention is lost to us entirely. At best, we may be able to trace a specialized invention to a given area, but hardly to a single site. We have reason to say that the potter's wheel is of Asiatic origin and that the cylinder seal is Mesopotamian. But we cannot prove that the cylinder seal was invented in Uruk, merely by pointing to the fact that the earliest known cylinders have been dug up at Uruk. Such items spread much too quickly to betray to us, thousands of years later, not only the civilization that produced them but also the very spot where they originated.

The spread of the knowledge of metals is a case in point. The collective testimony of a number of sites shows that copper was rare in

¹¹ See H. Frankfort, *Cylinder Seals* (1939), 224 ff.

¹² The origin of Egyptian writing can scarcely be viewed in any other light. Its ultimate, though indirect, dependence on Mesopotamian writing is indicated by the following considerations. There are hundreds of Mesopotamian tablets from predynastic times as against the single possible instance of the Lion Hunt palette in Egypt with its two written symbols. (On this subject see H. Ranke, *Heid. Ak. Wiss.*, 1924-25, 3 Abh.). According to Siegfried Schott (in Kurt Sethe's *Vom Bilde zum Buchstaben* [1939] 82) there is nothing in the Egyptian system of writing that points to a long period of development, whereas the evolution of Mesopotamian writing is abundantly illustrated from its very beginning. Moreover, the cylinder seal (admittedly of Mesopotamian origin) provides the link between picture and script ; and Mesopotamian economy (which differs markedly from Egyptian economy in historic times) furnishes an all but automatic explanation for transforming elements of design into elements of script (Falkenstein, *op. cit.* 32-3, 47). Finally, there is ample evidence of contacts between Mesopotamia and Egypt at the time of the evolution of Mesopotamian writing (A. Scharff, *Zeit. f. äg. Spr.* 71.89 ff.) But all this indicates no more than that the idea of writing was borrowed by Egypt (for this possibility see Schott, *op. cit.* 81). In form, the two scripts are strictly independent. Both are based on native artistic elements and the derivative scripts are as different as the respective art styles of Mesopotamia and Egypt.

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the early phases of the Obeid period, increasing gradually in use until the technique of metallurgy is mastered by Jemdet Nasr times. The art of working copper could not have been discovered on the sites where the metal is first encountered for the simple reason that those sites are not close to copper deposits. It must have been introduced from the outside. Once discovered, however, that art spread rapidly throughout the civilized world, to all areas which maintained contact with one another. The same is true of many subsequent stages of metallurgical progress. The underlying principle of diffusion enables us now to utilize those technological stages as so many chronological criteria. It follows that Susa I or Ghassûl, with their relatively high copper technique, cannot be as old as the Halaf period, in which knowledge of metals can scarcely be said to exist at all.¹³

It goes without saying that the still useful terms 'Neolithic' and 'Chalcolithic' presuppose, at least to a certain extent, the chronological application of the principle of diffusion. But we should bear in mind that incidental factors attendant upon diffusion must not be ignored. Not all goods popular with one civilization were welcomed necessarily by a neighbouring culture. Moreover, synchronisms furnished through diffusion have to be corrected in accordance with the lag involved in each instance,¹⁴ and that requires clear evidence as to the respective centres of the elements diffused. In questions of this sort in particular much work remains to be done.

F. So far we have been preoccupied in the main with the dynamics of proto-historic civilizations. With the above remarks in mind, we may now sum up briefly the external characteristics of the predynastic periods of Mesopotamia. The beginning is represented in Gawra 26 and Nineveh I by a Neolithic occupation which is paralleled in Judeideh 14, in northern Syria. It is not the absolute beginning of settled life, because the introduction of building and pottery had already been left behind. The first settlements of Mesopotamia were due, therefore, to outsiders.¹⁵ The succeeding Halaf period is given over to an advanced civilization with technically developed polychrome fabrics, terracotta

¹³ cf. *Journ. American Oriental Society*, 1938, LVIII, 672-3.

¹⁴ A considerable time lag is involved, for example, in the spread of the 'chalice ware' from Central Persia to the Nineveh area. On the other hand, the diffusion of the cylinder from Lower Mesopotamia required comparatively little time to reach Elam and Syria.

¹⁵ On the possible western origin of these outsiders further information may be expected from Garstang's excavations at Mersin.

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figurines, amulets, and the first stamp seals.¹⁶ Halaf has its centre of concentration in northern Syria and its settlements do not extend beyond the Tigris. Along that boundary it is met by an eastern culture, whose early manifestations known as Samarra coincide with the end of the Halaf period. Compromises between the two cultures are demonstrable along the line of contact, but the river barrier is not crossed far in either direction, except by scattered importations. Later phases of the eastern culture occupy the Obeid-Susa period. Metal-work is introduced and, in the north, temple architecture flourishes. The synthesized heritage of the Samarra-Obeid-Susa age is assimilated and gradually transformed in the succeeding Uruk stage, under repeated outside influences which result at length in the cultural separation of the north from the south.¹⁷ Henceforward the two provinces pursue divergent courses, although lively intercourse tends to level existing differences. The end of the Uruk period witnesses in the south the introduction of the cylinder seal and script. The period comes to an end with the arrival of a new type of painted pottery, probably from the west,¹⁸ and this pottery typifies externally the following Jemdet Nasr stage. Industry and commerce contribute to the growing wealth of Sumer, which trades now with the rest of Western Asia and with Egypt. Links with Elam are especially close, and the influence of the south is now felt in Upper Mesopotamia. Out of this syncretistic culture there emerges presently the historic civilization of Sumer, which is to leave a permanent mark not only on the rest of Mesopotamia and Western Asia but indirectly also on the classical world and the world of today.

SOCIAL ELEMENTS

The earliest civilizations of Mesopotamia have to be judged entirely by their material remains. Light on social developments is scanty and incidental. It is reflected by such products as religious architecture,

¹⁶ Gawra has yielded a charred impression of a stamp seal with an excellent design of an ibex, clearly datable to Halaf times. On the problematical date of the cylinder from Chagar Bazar (*Iraq* 3, pl. 1, 5) see Frankfort, *Cylinder Seals* 228.

¹⁷ Gawra XI-VIII must be treated as a separate culture province in spite of the links with Uruk VI-IV, which testify to the chronological relationship of the two areas. Von Soden has proposed the term 'Gawra culture' for the northern province (*Der alte Orient* 37 1-2, p. 9), but his archaeological interpretation of the culture in question is wholly inadequate.

¹⁸ I am referring here only to the polychrome geometric decoration of the period. For the naturalistic elements, as represented in the later Diyala ware, the source must be sought in the Susa II group, to use Frankfort's definition of it. (*Archaeology and the Sumerian Problem* [1932] 69).

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votive objects, and burial customs. Definite information on social conditions and social organization can be furnished only by epigraphic sources, and the earliest records known until recently represent the dynastic levels of Mesopotamia. Today we are able to extend our investigation to predynastic times and reach through the Jemdet Nasr stage to the last phase of the Uruk period. The results are illuminating indeed.

It has been known for a long time that the Sumerians had left an indelible impression on succeeding civilizations. Their influence came to be felt in language and literature, law and government, religion, education, and science. Material influence is attested by numerous Sumerian loanwords in Akkadian, some of which were taken over by later Semitic dialects. Elamites and Persians, Hurrians, Hittites, and Urartians, Phoenicians and Hebrews, all were among the direct or indirect heirs of Sumerian civilization. These facts have long been familiar. What is less common is the realization that the civilizing activity of the Sumerians had begun in proto-historic times; that the chief beneficiary of that activity was the social side of civilization; and that as a result of that activity the whole of Western Asia was to become a cultural unit, for all its heterogeneous and polyglot components which were to pass in review in the course of millennia. So strong was the assimilatory effect of the framework which the Sumerians had left, that the Semites and non-Semites who were caught in it came to have more in common than did the Semites and the Egyptians, in spite of the linguistic ties that bound the two latter groups.¹⁹

Space will not permit to furnish detailed support for these assertions. Only the general line of reasoning can be indicated at present. It starts with the emergence of writing at the end of the Uruk period.

Adam Falkenstein has demonstrated²⁰ that the earliest written records found in Sumer represent the absolute beginning of that script. Its direct predecessor was the cylinder seal, since many figures which occur on the oldest seals appear also on the earliest tablets. Writing first served the purposes of temple economy, with private business turning to the new medium shortly afterwards. Historical and literary compositions are the result of subsequent development. From the

¹⁹ Hence the many close ties between the Hurrians and the Hebrews as against the less substantial cultural connexion between the Hebrews and the neighbouring Egyptians. The traditional opposition of the Hebrews to the Egyptians may indeed be viewed in the same light.

²⁰ *Archaische Texte aus Uruk*.

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very beginning, however. lists of signs are compiled as a guide to the scribe and the reader. Now the cylinder seal is admittedly of Mesopotamian origin, hence the derivative script bespeaks the same source; this conclusion is born out by independent considerations.²¹ Finally, the language used in the texts of the Jemdet Nasr period is demonstrably Sumerian. Since the first tablets are only slightly older, and since they are all but identical with those of the Jemdet Nasr age, they can scarcely represent any other language. The introduction of writing was therefore the work of the Sumerians.

Let us now carry this demonstration to its logical conclusion. Writing was not a deliberate invention, but the incidental by-product of a strong sense of private property, always a characteristic of classical Sumerian civilization. The cylinder seal was a device to identify owners of goods, presented to the temple or the object of private transactions, and the first tablets merely implements the operation of temple economy. The same respect for private property is reflected in the records of purchases made by later rulers of Sumer and Akkad;²² it is epitomised in the fundamental tenet of the Code of Hammurabi that a purchase not accompanied by a written document is a theft punishable by death;²³ and it is exhaustively illustrated by the tens of thousands of business documents recovered from the archives of ancient Mesopotamia.

Sumerian government and governmental economy reveal the same basic orientation. The Sumerian city state represents a commercial theocracy in which private enterprise had an important place. The pronounced legalistic order finds its expression in collections of laws which are to become paradigmatic for Babylonia, Assyria, Anatolia, and Palestine, and are implicit in the legal documents of the Elamites, the Kassites, and the Hurrians. The legal framework is transplanted by means of the cuneiform writing,²⁴ itself an early offshoot of Sumerian economy. Inevitably, religious and literary elements are transmitted with the legal ideas. Sumero-Akkadian deities are given a place in the

²¹ Based on the inner evidence of the script; cf. *ibid.* 25-6. For the bearing of the cylinder seals see also Frankfort, *Cylinder Seals* 1.

²² cf. e.g. Urukagina, Cones B and C, cols. XI-XII (See now the article of B.A. van Proosdij in the Koschaker Festschrift [*Studia et Documenta* II; Leiden, 1939] 235 ff.)

²³ §7; cf. M. Schoor, *Vorderasiatische Bibliothek* 5 (1913) XIII.

²⁴ It is worthy of notice that the Hurrian and Hittite syllabaries rest on a prototype which antedates the Dynasty of Hammurabi; cf. JAOS 58, 189, note 68.

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Hurrian pantheon,²⁵ and the Epic of Gilgamesh is translated into Hurrian and Hittite. In this manner, Sumerian writing, bearing the fruits of Sumerian civilization, pervades the whole of Western Asia, thus achieving a more lasting and far-reaching effect than the most extensive conquests of Mesopotamian emperors. Babylonian kings struggle to phrase their accounts in a language already dead.²⁶ Remote Ugarit uses that language in its vocabularies. Ashurbanipal boasts of his ability to read inscriptions in the 'obscure Sumerian',²⁷ and Achaemenian kings employ formulaic phrases which echo statements by Sumerian rulers. But it is always the law, the *torah* in the language of a culturally related centre, that governs human conduct and safeguards human progress.

This sketch is not intended to minimize non-Sumerian contributions to the civilization of Western Asia. But too much emphasis cannot be placed on the original Sumerian nucleus. In the course of millennia it was modified, improved, and adjusted to various local requirements. Notable additions to it were made. But the basic legal, administrative, and scientific elements can be traced to the early days of the emergence and evolution of writing. Those elements remain operative as late as Persian and classical times.

The one section of the ancient East that was not involved in this course of social progress was Egypt. The determining factor may be traced to the secondary position of the law in the Egyptian social order. This position was determined in turn by a radically different concept of the rights of the individual. The king was here the supreme judge and the ultimate master of all he surveyed. His was an authoritarian state that knew no higher power. Hence Egyptian government and Egyptian law follow a pattern of their own, and that pattern is not upset until Assyrian and Persian conquests have drawn Egypt into the orbit of the West Asiatic civilization.

THE UNDERLYING ETHNIC ELEMENTS

It is evident from our consideration of the material remains left by the early inhabitants of Mesopotamia that many ethnic elements contributed to the final product which is handed over to the people

²⁵ See A. Götze, *Kleinasien* (1933) 125.

²⁶ cf. A. Poebel, *AFO* 9 (1933-4), 250-1. The influence of Sumerian on the 'classical' dialect of Hammurabi Akkadian is stronger than is generally recognized. A good illustration is furnished by the *t*-form of Akkadian as interpreted by Goetze, *JAOS* 56, 333. ²⁷ cf. B. Meissner, *Babylonien und Assyrien* 2, 328.

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of the Early Dynastic times. Common survivals, cross-fertilization, and diffusion may have contributed to the levelling of such cultures as those of the Halaf and Obeid periods; but geographical differences alone would have been sufficient to differentiate in course of time the underlying ethnic groups.²⁸ Subsequent changes in the course of the Uruk period herald the arrival of fresh ethnic elements, and the same is true of the Jemdet Nasr period. That a degree of continuity is preserved, nevertheless, is due mainly to the way in which early civilization advanced. Fresh arrivals may have aided in the progress of the invaded areas. They were in a position to improve, but could not entirely obliterate, the cumulative and synthesized heritage of the past.

To identify the individual ethnic elements which co-operated in producing the civilization of preliterate Mesopotamia is a more hopeless task today than it ever appeared to be. It did not seem nearly as difficult before we found out that the culture of each period was a composite fabric. Furthermore, physical anthropology held out the hope that the racial strains might be disentangled. But this promise has not been fulfilled. In fact, the available anthropometric evidence is less conclusive in this respect than the circumstantial evidence from material remains.²⁹ The process of racial levelling is immeasurably older than that of cultural blending. The latter process did not succeed in obliterating all heterogeneous elements, and the chronological testimony of stratigraphy enables us to recognize an intrusive group even where the skeletal evidence may be non-committal.

When we work back from historic times, we encounter the Sumerians at the end of the Uruk period. The question that comes up next is whether the Sumerians had been in the land from the time of the earliest settlements, or arrived in any one of the succeeding stages. This question is not a new one. There is, however, new evidence that bids fair to bring it nearer to a satisfactory solution. Only a bare outline of the relevant facts can be given at this time.

The arrival of the Sumerians at the beginning of the Obeid period has been advocated most energetically by Frankfort.³⁰ He bases his conclusion on the argument from continuity, although he is aware that

²⁸ Note, e.g. the individualizing elements in Susa I, the Nineveh area, and Lower Mesopotamia in Obeid times which tend to break down the underlying cultural relationship of these three regions.

²⁹ See the monograph of W. M. Krogman in *Or. Inst. Pub.* xxx (1937), 213-85

³⁰ *Archaeology and the Sumerian Problem* 40 ff.

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the continuity which he seeks to establish is broken in many significant points. Mesopotamian pottery, for example, is kaleidoscopic in its succession of distinctive families.

Not to repeat the arguments for a later arrival of the Sumerians which I have given in full on other occasions,³¹ I shall make only the following additions. The Sumerians are definitely in Lower Mesopotamia in the latter half of the Uruk period, when the cylinder seals and writing first appear. Now Uruk B is characterized also by significant changes in pottery and architecture and the appearance of a pronounced naturalistic style in sculpture, a style which dominates, furthermore, the contemporary glyptic art. Now these changes, and particularly the abandonment of the earlier stamp seal, are radical enough to betray the intrusion of a forceful and heterogeneous ethnic group. The most logical candidates for that event are the Sumerians.

But we can go further than that. Now that Lower Mesopotamia is matched and exceeded in antiquity by the north, we have there a reliable contemporary witness. If the Obeid period in Lower Mesopotamia was of Sumerian origin, then its northern counterpart must have been Sumerian, too. And yet there is nothing in the mass of contemporary material from Gawra and Arpachiyah that might foreshadow the typically Sumerian products of a later date. The human representations of the period are unlike anything achieved by the Sumerians. Most important of all are the seals, of which we have now a large collection. Not only are the northern seals of the Obeid period stamps and not cylinders, but their style is also radically different from the style of the second phase of Uruk. It is linear and schematized, not full-bodied and naturalistic.³² Naturalistic style, cylinder seals, and writing are unmistakable witnesses of Sumerian occupation. None of these witnesses appears in the north before Jemdet Nasr times, when the earlier direction of cultural diffusion from north to south is reversed. In short, Sumerian presence is not felt in the north in any of the periods prior to Jemdet Nasr. Since there was a close relationship between north and south in Obeid times, the Sumerians cannot have been the

³¹ AJA 37 (1933), 459 ff.

³² The stamp seals from Gawra VII-VIII, published in my *Excavations at Tepe Gawra* I (1935), pls. LVI-VIII, can now be supplemented by a large number of seals and impressions from the earlier levels. Their cumulative evidence is to the effect that nothing comparable in style to the seals from Uruk IV and later is present at Gawra until the very end of the Uruk period. In other words, the glyptic style that is characteristic of the Sumerians does not begin to affect the north until the Sumerians had demonstrable contacts with the south.

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authors of that age. Other cultures flourished before their arrival, and it is to those cultures, as we have seen, that the country owed a degree of continuity.³³ All signs point, therefore, to the arrival of the Sumerians in the course of the Uruk period, and no real difficulty is occasioned by this assumption.

It follows that the foundations of the historic civilization of Mesopotamia were laid in Uruk times. The next stage was one of intensive co-ordination and readjustment. Increasing wealth brought in new elements, specifically from Elam and the west. But the Sumerian framework had been established and was gaining strength. Presently it was ready for emergence into the Early Dynastic order and the full light of history.

³³ Frankfort's argument that the Sumerians were 'the earliest occupants of the valley of the Two Rivers' rests on the premise 'that the continuity in the material culture of Mesopotamia may best be understood as based on a similar ethnic continuity which, in view of the later stages of the development, we have to call from the very beginning Sumerian' (*op. cit.* 46). The first part of this proposition is self-evident; ethnic survivals as transmitters of material accomplishments may safely be assumed from the beginning of chalcolithic times at least. But the conclusion does not follow at all. One could say with equal right that the Hurrians of the Kirkuk area were its original population because the texts of the second millennium use the script and reflect many legal and administrative ideas of the preceding millennium. What is characteristically Sumerian in Lower Mesopotamia turns out to strain the normal continuity instead of maintaining it. The underlying influences are eccentric rather than concentric. The Sumerians were later arrivals, therefore, who injected new and vital elements into the inherited civilization.

Place-names and Early Maps

(with special reference to Wales)

by F. J. NORTH

THE significance of early maps in the elucidation of place-name problems is generally recognized, but the converse also applies; for place-names have their value in the study of early maps—in attempts to discover the sources of information used by the compiler of a map, or to determine the authorship of an anonymous map, as well as in problems concerning the relationship between maps of the same area.

The presence or absence of certain names has often been cited as evidence in discussions of this kind, but during the course of work upon early maps of Wales it became apparent that the *forms* of the names sometimes yielded evidence of greater diagnostic value than that relating simply to their inclusion or their distribution.

In times past spellings were less standardized than they are now; the 16th-century topographer, Leland, for example, managed to include in his records at least seven different renderings of the name of the river which in English is called Usk, and in Welsh Wysg—*Wisch*, *Wisk*, *Wiske*, *Wske*, *Wyske*, *Wysc* and *Whisk*.* This might, on first thoughts, be considered a reason for suggesting that the spellings of place-names on early maps and in early topographical works can have no value in critical studies, but Leland's treatment of Usk is an extreme case, and it will often be found that the variations fall into well-defined groups. For example, in 16th-century maps there are at least seven renderings of Haverfordwest in Pembrokeshire,—*Arford*, *Arforde*, *Harford*, *Herford West*, *Herefordwest*, *Haverford West*, and *Hauerfordium* and in attempting to discover relationships it is clear that while *Herefordwest* might have been derived from *Herford West* or *vice versa*, *Arford* cannot have been transmuted into *Haverfordwest*. Similarly, common influence may be looked for in maps that give *Gallon* or *Gellon*

* It should be noted that although these forms differ so much in appearance, all but the first of them sound nearly alike when spoken; six are phonetically close to the Welsh form than is the English *Usk*.

PLACE-NAMES AND EARLY MAPS

for Llangollen, but not between maps that give those forms, and others that give *Langollyon* or *Langothlan*.

The results of investigation along these lines are well illustrated by reference to Llandovery in Carmarthenshire. On two 16th-century maps, closely related in point of time and issued in the same volume—the British Isles, and Humphrey Lhuyd's England and Wales in the first supplement (1573) to the Ortelius Atlas, *Theatrum orbis terrarum*—this Welsh town appears as *Tlauanteuery* and as *Ymohyfri* respectively, and apart from the evidence provided by their positions on the maps no one could be blamed for assuming that the names related to two different and otherwise unknown places.

Other renderings of Llandovery (arranged in chronological order) include :—

Landury, 14th-century 'Gough' map of Britain (Bodleian Library).

Lāduri, anonymous (manuscript) map of Great Britain and Ireland of about 1534, in the Cotton Collection in the British Museum.

<i>Llanameuery</i>	}	Leland's <i>Itinerary</i> (c. 1536).
<i>Llanamevery</i>		
<i>Llanandeuery</i>		

Llancanery (Stowe's transcript of Leland's *Itinerary*).

Landuri, map of England and Wales attributed to George Lily (1546).

Tlauanteuery, Mercator's map of the British Isles (1564).

Tlaua-nte-uery, map of the British Isles in the Ortelius Atlas of 1570.

L. Ymdhyfri, Humphrey Lhuyd's map of Wales (1573).

Ymohyfri, Humphrey Lhuyd's map of England and Wales (1573).

Llanymthefry, Saxton's map of the counties of central Wales (1578).

Llanymtheuery, Saxton's map of England and Wales (1579).

Llanymtheuerye, Saxton's large map of England and Wales (1583).

Ymohifri, map of England and Wales, after H. Lhuyd in J. Bussermercher's European Atlas (1592).

Llanymthefry, map of South Wales and the southwest of England in Mercator's Atlas (1595).

Llanymtheuery, map of England and Wales in the same atlas.

Tlauauery, Gerard de Jode's Atlas (1593).

The present Welsh form is *Llanymddyfri* (Llan ym ddyfri), which means the church in or among the waters and might be taken as referring to the position of the town between the river Towy and its tributaries, Bran and Gwydderig. The name was, however, originally

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Llan am ddyfri, the church on the waters, and it related not to the town of Llandovery (there is no church in the town itself and no parish of Llandovery) but was an alternative name for the church of Llandin-gat (dedicated to S. Dingad) a little to the south, which was formerly on the banks of the Towy, although the river now flows some distance away to the west.¹

Humphrey Lhuyd's version, *L. Ymdhyfry*, was evidently based upon a proper understanding of the Welsh form, for Lhuyd, like some of his contemporaries used *dh* as the equivalent of *dd*,² which is pronounced like the *th* in *tether*, not as in *thin*, and *Ymohyfry*, which occurs on his map of England and Wales, illustrates the kind of mistake which was introduced when maps were copied by people unfamiliar with the language of the country concerned. Lhuyd generally used the letter *L* as a contraction for *Llan*, and the engraver frequently left it out. In the case of his map of England and Wales not only was the *L* of *L. Ymdhyfry* omitted, but the *d* was made into an *o*, and the name thus effectively disguised.

Leland's rendering, *Llanandeuery*, relates to the earlier form of the name, and represents an attempt on the part of one unfamiliar with the Welsh language to write a name given by word of mouth (the written *u* was intended to be pronounced as *v*), and his *Llanameueri* results from the careless omission of a 'd', a mistake which led him to make one much more serious, viz., that of implying that the town was named after the brook (Bawddwr) that flows through it, which brook he accordingly called *Euey* (= *Eferi*) *Brook*. *Llancanery* in Stowe's transcript of the 'Itinerary' is without significance, being the result of unintelligent copying.

Mercator's *Tlauanteuery* (1564) could be a mistaken rendering of Leland's form, for one has only to examine manuscripts and maps of the period to see how easily *Ll* might be miscopied *Tl*, and the general assemblage of names on Mercator's map suggests Leland influence, but it may be the result of an attempt to represent the sound of the spoken *Ll*. The chances that either is the case are about equal, because this is the only name so treated—all the other *Llan*-places in Wales on Mercator's 1564 map begin with a single *L*.

When Mercator's map was used as the basis of the British Isles in the Ortelius Atlas of 1570, the word was broken up into three syllables

¹ See notes by the late Egerton Phillimore in *The Description of Penbrokshire*, by George Owen of Henllys, *Cymmrodorion Record Series*, London, 1891, p. 207.

² Information from my colleague Mr Francis G. Payne.

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Tlaua-nte-uery, of which the first and last were on one side of a river and the middle one on the other. In the corresponding map in the Gerard de Jode Atlas of 1593, the name lost its middle portion and became *Tlauauery*, which, in the absence of any connecting links, would never be associated with Llandovery.

Saxton's *Llanymthefry* is obviously a fairly successful attempt to reproduce the Welsh form of the name, for the 'dd' of *Llanymddyfri* is, as already indicated, pronounced like 'th' in *tether*, and if the 'th' in *Llanymthefry* is similarly pronounced, the Welsh form is recognizably imitated. We know that Saxton travelled personally in Wales, and that he had letters from the Privy Council instructing the mayors in the Principality to give him every facility, and, when he left any town, to provide him with a 'horseman that can speke both Welshe and Englishe, to safe conduct him to the next market towne'.³

Saxton's *Llanymtheuery* suggests that one of his informants was familiar with the writings of Leland, or that he was familiar with Mercator's map of 1564, and tried to improve upon its *Tlauanteuery*.

The outlines of Wales in the Mercator maps of 1595 were obviously based upon those of Saxton,⁴ and the rendering of Llandovery as *Llanymthefry* on one of the maps, and as *Llanymtheurei* on another, suggests that the continental publisher used Saxton's county maps in the preparation of his larger maps, i.e. those in which England and Wales occupied four sheets, and one or both of Saxton's general maps of England and Wales (1579 and 1583) in the preparation of his single sheet map of Britain (1595).

Although the Welsh form is *Llan ym ddyfri*, the usual English rendering and pronunciation is *Llandovery* (in colloquial Welsh, *Llandyfri*), and it would seem that the name has been so pronounced for many hundreds of years, for the Gough map gives it as *Landury* (=Landvry). This form also appears in the anonymous map of 1534, where it is given as *Lāduri*, and on the Lily map, where it appears as *Landuri*. From this it would seem that the makers of these two maps derived some, at least, of their names from the Gough map or one related to it, and in respect of this particular name owed nothing to Leland or any map based upon his work.

A connexion between these two maps is also suggested by the fact that not only do they give similar forms for the name Llandovery,

³ Acts of the Privy Council, 1575-7.

⁴ F. J. North, 'The Map of Wales before 1600 A.D.' *Archaeologia Cambrensis*, vol. xc, 1935, also issued as a publication of the National Museum of Wales.

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but on each of them the town is wrongly and similarly misplaced, being indicated as upon the Usk instead of upon the Towy. It is hardly likely that such a mistake should have arisen independently twice within a few years, so that although Edward Lynam has shown that, taken as a whole, the Lily map cannot be regarded as a copy of the anonymous one of 1534,⁵ the small but significant resemblance to which attention is here drawn suggests that the compiler of each map derived some of his information from a copy of the Gough map, with which each has affinities in respect of the general outlines. This view receives support in the fact that the 1534 map and the Lily map, alone among known contemporary or earlier maps, give *Crykky* for the Caernarvonshire town of Criccieth: other early maps give *Cricky*, or a variant of *Cryketh*.

Another curious mistake suggests that the 'Lily' map, or one of its numerous versions, was among those consulted during the preparation of Mercator's 1564 map of the British Isles. This map gives *Month flu* as the name of the river on which Caernarvon stands, while on the 'Lily' map it is *Moith f*. No other map or topographical description contains such a name, and there is no historical evidence that it was ever used for the river Seint, which flows past Caernarvon.

On the 'Lily' map, the river called *Moith f* extends from Caernarvon much further south than *Crykky*, and is thus made to flow through the commote of Euionyth or Euionith. Now a written *Euionith* might easily be copied as *Monith*, and recopied as *Month*, or *Moith*, and it would be equally easy for Euionith, the name of a district, to be mistaken for the name of a river, which would thus acquire a name that did not belong to it. If, then, on a later map (e.g. Mercator's) the river was more correctly indicated as a shorter stream, the name would naturally be moved northwards to accompany it. It is more likely that the mistake was a progressive development on related maps, as here suggested, than that it arose spontaneously twice in less than twenty years.

The study of variations that arise from ignorant or careless copying may help in solving problems of chronology. Two maps by Humphrey Lhuyd appeared in the 1573 supplement to the Ortelius atlas—a map of Wales and a map of England and Wales. A letter written by Lhuyd

⁵ 'Reproduction of the "Lily" Map, with a memoir by Edward Lynam'. G. H. Bean Library, Jenkintown, Penna, U.S.A., see also 'The Map of Wales', in *Archaeologia Cambrensis*, 1935, xc, and R. A. Pelham, on 'The Erroneous Position of Llandovery on Sixteenth century Maps', *Archaeologia Cambrensis*, 1932, LXXXVII, pp. 194-9.

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shows that the manuscript of the map of Wales was completed in 1568,⁶ but it is not clear whether the draft for England and Wales was sent at the same time or shortly afterwards. An examination of the names, however, shows that if one of the maps was consulted during the engraving of the other, the Welsh map was the first to be drawn, because on the map of England and Wales there are several mis-spellings that can only have been derived from the more correct renderings on the map of Wales. *L. Ymdhyfry* (Llandovery), on the Welsh map, and *Ymohyfry* on that of England and Wales, have already been mentioned; other instances are found in *Porth haythne* (Porth Aethwy in Anglesey) which became *Porthay-thur*; *Abermo* (Barmouth) which became *Aberho*; and *Aberystwyth* which became *Abeystwyth*.

From the forgoing notes it transpires that variations in the spellings of place-names arise from two principal causes: (a) mistakes due to the difficulties of deciphering badly written names or due to careless copying; (b) attempts to render phonetically names given by word of mouth.

We have a good illustration of the latter in a note made by Leland concerning a river that flows into the Teifi. 'The watar I hard say' he wrote, 'is caullid *Glesse rode*'—thus effectively disguising the real name, *Glâs-ffrwd*.⁷ The same writer was more successful when he wrote *Poullthelly*, which presents a recognizable pronunciation of *Pwllheli*, without unduly obscuring the name as it should be written.

Many interesting examples of phonetic efforts are to be found in the charts prepared for the use of sailors. In Mackenzie's 'Chart of the North part of Cardigan Bay' (1775) for example, we have *Tunvannau* (in Merioneth) for *Tonfanau*—the Welsh *f* being pronounced as *v*. Other charts by the same man illustrate the difficulties experienced by 'foreigners' in dealing with the Welsh *Ll*. Thinking no doubt of the Scottish pronunciation of *ch*, Mackenzie gave *Chlaninthuïn* for *Llanenddwyn*, *Chlanthua* for *Llanddwywr*, and *Chlanabba* for *Llanaber*. In spite of its strange appearance, a spoken *Chlan-in-thu-in* (with *th* as in tether) would almost certainly be understood by a Welshman, and a person enquiring for *Chlan-thu-a* would be much more likely to be understood than if, unfamiliar with the pronunciation of Welsh letters, he tried to say *Llanddwywr*.

Lanstuffin for *Llanstephan*, on Mackenzie's 'Chart of Carmarthen

⁶ F. J. North, *Humphrey Lhuyd's Maps of England and of Wales*. *Archaeologia Cambrensis*, 1937, xcii.

⁷ L. T. Smith, *The Itinerary in Wales of John Leland*, 1906, p. 56.

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Bay', 1775, sounds better than it looks, and the fact that on the same chart several other places near the Carmarthen coast, and in the Gower Peninsula opposite, are also made to begin with a single *L*, e.g. Lanelly, Langanith (Llangennith), Lanredian (Llanrhidian), while the *Chl* is used for inland places all round, suggests a limited region in which the 'foreign' element was so dominant that in the pronunciation of local names the Welsh *Ll* had been almost if not completely dropped. Since the arrival of the Normans, Gower has tended to be less typically Welsh than Wales as a whole, and the foreign element seems to have made itself felt also in the Carmarthen coastal region.

Llanrusted (on Greenville Collin's 'Chart of the coast of Wales', 1693, and other maps of the time) told the foreigner how to pronounce Llanrhystyd, a port southwards of Aberystwyth, while *Lemster* on Mercator's map of the British Isles, 1564, shows that the contracted pronunciation of Leominster was in vogue in the 16th century. Other examples of evidence as to abbreviated pronunciation are to be found in *Scokam*⁸ and *Skokum*⁹ for the Island of Skokholm off the Pembroke coast, *Harrison*¹⁰ for Haroldstone, *Goodick*¹⁰ for Goodwick, and *Muslick* for Musselwick,¹¹ all in Pembrokeshire.

In addition to throwing light upon the pronunciation of place-names, these attempts at phonetic renderings sometimes help to remove doubts concerning the original forms of names.

On Christopher Saxton's map of Merionethshire and Montgomeryshire the name *Sarnabugh Poynt* is placed in the sea between Towyn and Barmouth. The name, similarly spelt, occurs also in Speed's map of Merionethshire (1610), but on Greenville Collin's 'Chart of the coast of Wales', 1693, it is given as *Sarnaburg Point*. Other renderings include *Sarnabug Point* on the 'Chart of the St. George's Channel' prepared for Nicholas Tindal's edition of Rapin's *History of England* (1726-31), *Sarnabuch Pt*, on the 'Accurate map of North Wales' published by Christopher Bowles, 1785, and *Sarn buh*, on Mackenzie's 'Chart of the North Part of Cardigan Bay' (1775), *Sarny Buch*, on Cruchley's issue (about the middle of the 19th century) of maps based on the Ordnance Survey, with *Sarn-y-bych* and *Sarn y*

⁸ Mackenzie, 'Southwest Coast of Wales', 1775.

⁹ Chart of St. George's Channel, prepared for Nicholas Tindal's edition of Paul de Rapin's *History of England*, 1726-31.

¹⁰ Mackenzie's 'Chart of the Coast of Cardigan Bay', 1775.

¹¹ Mackenzie's 'Chart of the South Coast of Wales', 1775.

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Bwch in modern works.¹² The last named form also appeared on the map of England and Wales by John Rocque 'Chorographer to His Majesty,' 1794.

Sarn means a causeway, and in this case refers to a bank of stones stretching out to sea, after the fashion of two other sarns, larger, but of similar character, that have played an important part in the legendry and folk-lore of Cardigan Bay.¹³

On some original manuscript the name would, no doubt, have been quite correctly written out in the sea against some symbols indicating submerged rocks or shoals, but the professional cartographer, adding the word Point, made it to appear as the name of a promontory. *Burg*, *bug*, *bugh*, and *buh* are, in themselves, meaningless in terms of the Welsh language, but while Collin's *burg*, and Tindal's *bug* are the results of misunderstanding in the one case and carelessness in the other, from what we know of Saxton and Mackenzie we may assume that *bugh* and *buh* are attempts at phonetic rendering.

Buch is an obsolete Welsh word meaning cow, and it might seem that the original name was *Sarn-y-buch*—the causeway of the cow. The adoption of *bugh* and *buh* is, however, an indication that the vowel sound was something like *ugh*, the expression of disgust, or like the *oo* in cook, and this shows that the Welsh form cannot have been *buch*, for in Welsh it is *w* and not *u* which has the sound of *oo*, and *buch*, like *bugh* and *buh* must have been an attempt at phonetics.

The original name of the submerged pebble bank was, therefore, *Sarn y bwch*, the buck's causeway; this makes intelligible another name that has also been applied to the bank, *Sarn y gafr*,¹⁴ for *bwch* *gafr* means he-goat. It also fits in with the fact that the headland near Towyn, which can be seen from Aberystwyth, is sometimes locally called *Pen Bwch*.*

As examples of less successful efforts at phonetic spellings, which copyists still further obscured, we may take *Sunny*, the name given to a sheet of water adjoining the coast near Towyn in Merionethshire, on Mackenzie's 'Chart of the North Part of Cardigan Bay', 1775, and

¹² W. Ashton. *The Evolution of a Coast-line*. London, 1920; O. T. Jones. *Welsh Outlook*, vol. 8 (1921) p. 310; C. F. Cliffe. *Book of North Wales*, London (1850).

¹³ F. J. North, 'The Legend of Llys Helig—its Origin and its Significance'. *Llandudno, Colwyn Bay and District Field Club*, Llandudno, 1940.

¹⁴ *The Cambrian Traveller's Guide*, London, 1813, col. 337.

* Information from Mr R. J. Thomas, Aberystwyth.

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Carodimbitrock on the reduced version of Saxton's map of Caernarvon which appeared in the 1607 edition of Camden's *Britannia*.

A river that flows from Lake Tal-y-llyn to the sea near Towyn is called Avon Dysynni, and near its mouth it spreads out into a lake or lagoon called Broadwater. Several maps, e.g. Speed's Merionethshire (1610) and Bowles' North Wales (1785), give the name of the river as *Desunny*, but in Mackenzie's chart the name has been shortened to *Sunny*, and made to apply not to the river, but to the lake at its mouth.

Carodimbitrock is the name given (in Camden) to a point on the coast near Pwllheli. Other 17th-century maps give the name as *Carodinbillrock*, which as far as appearance goes is no more helpful. Saxton's map of Caernarvonshire and Anglesey (1578) records the name as *Carodimbil rock*, which brings us a little nearer to the correct form.

On Bowles' map of North Wales, 1785, it is *Carreg y Wimbill*, in which we recognize Carreg-yr-Imbill, better known to English visitors as the Gimlet or Gimblet Rock. Ignorant of the fact that the Welsh article *y* becomes *yr* when followed by a vowel, many of the 19th-century map-publishers (following Cary and Cruchley) gave the name as Careg-y-rimbill. One of the most stupid of all the renderings of the name is *Caregy Wanbill* on the map of North Wales in Ellis's *New and Correct Atlas of England and Wales*, 1819. In Carodimbitrock the last syllable is an unnecessary repetition, for Carreg means rock.

To illustrate the application of the methods of approach outlined in the preceding paragraphs, we might take the following map-names, and see how one name came to assume such diverse forms: *Chlanbaddin*,¹⁵ *Lampad Vale*,¹⁶ *Badoin*,¹⁷ and *Laupoderuain*.¹⁸ Other map-renderings include *Llanbedvaur*,¹⁹ *Llanbadarnvawr*,²⁰ *L. Badarn*,²¹ *Lampaderuale*,²² and *Llanpaternuaure*.²³

The real name is Llanbadarn Fawr (the *f* pronounced as *v*) and it relates to a village now to all intents and purposes absorbed by the town of Aberystwyth. It takes its name from the church dedicated to St. Padarn (St. Paternus) who is supposed to have come from Armorica

¹⁵ M. Mackenzie, *Chart of the North part of Cardigan Bay*, 1775.

¹⁶ Anonymous (Cottonian) map of the British Isles, 1534.

¹⁷ H. Lhuyd, *England and Wales*, 1573.

¹⁸ Mercator, *British Isles*, 1564.

¹⁹ Herman Moll, *South Wales*, 1724.

²⁰ John Speed, *Cardiganshire*, 1610.

²¹ H. Lhuyd, *Wales*, 1573.

²² Mercator, *Europe*, 1554.

²³ Saxton, *England and Wales*, 1583.

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and have settled here.²⁴ The adjective *fawr*, meaning great, distinguishes this church (and village) from several others also called Llanbadarn, which St. Padarn is supposed to have founded elsewhere in Cardiganshire and the adjacent parts of Brecknockshire and Radnorshire.

Speed's *Llanbadarnvawr* merely changes the written *f* for the spoken *v*, while Saxton's *Llanpaternuaure* gives the French form *Paterne*, and uses *u* and *v* as interchangeable letters. Mercator's *Laupoderuain* results from an *n* being taken for a *u* (a mistake easily made in the writing of the time, and, indeed, by no means infrequent today), and from a *u* being used for a *v*, with *ur* at the end miscopied as *in* (also a mistake readily understandable in the circumstances). Mercator's *Lampaderuale*, the anonymous *Lampad Vale*, and Moll's *Llanbadvaur* result from confusion between Llanbadarn and Lampeter (variously miscopied as Lampads and Lampeds) with, in the case of the first two, unsuccessful guesses concerning the concluding part of the name.

In the draft of his map of Wales, Humphrey Lhuyd gave the name as *L.Badarn*, and *Badoin* results from the elimination of *L* and the conversion of *ar* into *oi* when the engraver employed by Abraham Ortelius drew Lhuyd's map of England and Wales. *Chlabaddin* is Mackenzie's attempt to reproduce the name as it was pronounced.

If it seems a matter for surprise that early maps include a relatively high proportion of names relating to coastal features, not now regarded as of sufficient importance to be inserted even on maps of considerably larger scale than those with which we have been concerned, the explanation lies in the fact that cartographers and map publishers had to rely largely on sea-faring travellers for their information, and in those days features that served as landmarks were almost as important to sailors as the harbours to which they were bound.

Recognition of this fact often throws light upon map-names that would otherwise be difficult to explain. For example, in the south-eastern part of Glamorgan, on a manuscript map of Britain prepared by the Swiss geographer Aegidius Tschudi, about 1550,²⁵ there is the name *Sannicola*, which is obviously a form of St. Nicholas, and since there is an old established village of that name on the main road a few miles west of Cardiff, it might seem, on first thoughts, unnecessary to question the significance of the name on Tschudi's map.

²⁴ For an account of St. Padarn see S. Baring Gould and J. Fisher, *Lives of the British Saints*, vol. IV (1913), pp. 39-51.

²⁵ E. Heawood, 'Early Maps of Great Britain . . . Aegidius Tschudi's Maps', *Geographical Journal*, 1933, LXXXI, 39-43.

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It is clear, however, that Tschudi's names were derived from various sources—some (as the spellings indicate) from Leland, some from the Ptolemy maps (e.g. *Tuerobis fl.* for the Teifi, with *Octapitarum* and *Ganganorum* for the two principal Welsh promontories), and some from the Portolan charts (the sea charts of the 14th and two subsequent centuries). The form of the name Sannicola suggests that it belongs to the last-named category, for it appears frequently on those charts, either as given above or else as *Sannicolas*, or *S. Nicollo*. Now the portolan charts were intended for the use of mariners, and the names included in them are mostly those of places where ships could call, or of places that could be sighted for the guidance of seamen, but the village of St. Nicholas can neither be reached by water nor be seen from the sea, which seems to suggest that it is not the place indicated by Tschudi's name.

Enquiries among old seamen elicited the information that the tower of the church at Barry, on the shores of the Bristol Channel, used to be a familiar landmark until the growth of the town and coal-port, within living memory, made it difficult to locate; and since the church is dedicated to St. Nicholas, it transpires that *Sannicola* on Tschudi's map refers to the church around which the town and port of Barry have grown, not to the inland village of St. Nicholas.

In the middle of the 14th century an unknown Spanish friar wrote what he called a *Book of the Knowledge of all the Kingdoms, lands, and lordships that are in the world*.²⁶ His book purported to be an account of his own travels and observations in all parts of the world then known, but some of his place-names suggest that his information was sometimes derived from maps and not from personal visits or enquiry.

The friar described how, leaving the land of *Escocia* he came to the kingdom of *Inglaterra*, which, he said, had eleven great cities. Of these he named seven, all of them ports, for which he used characteristic portolan chart forms, e.g. *Londres*, *Gunsá* (Winchelsea), *Antona* (Southampton), *Artamua* (Dartmouth), *Premua* (Plymouth), and *Miraforda* (Milford). He further stated that in the province 'they call *Gales* (i.e. Wales) there is a great city called *Dirgales*'. Now there is no city in Wales with a name anything like *Dirgales*, which name has usually been regarded as incapable of interpretation.²⁷ On many portolan charts, however, there are, in the region we should call Wales,

²⁶ *Libro del Conoscimiento*, etc., ed. by M. J. de la Espada (1877) trans. by C. Markham. London, Hakluyt Society (1912).

²⁷ *Libro del Conoscimiento*, *ibid.*, p. 65.

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the names *Norgalles* (or *NorGales*, or *Morgales*), and *Uirgalles* (or *uirGales*, or *Virgales*), meaning, respectively, North Wales and South Wales, and these names appear on quite early charts when few if any of the Welsh ports were included. The Spanish for south is *sur*, and it would seem that on some early chart the *Surgales* appeared as *uirgales*. Conservatism is one of the characteristics of the portolan charts, and as additional names came to be added around the Welsh coast, *Norgales* and *uirgales* remained in the list, and even until late in the 16th century were written near the coast as if they, too, were ports; often they were written in red or in some distinctive fashion, as if they were to be taken as equal in importance to such ports as Milford, Bristol and Southampton.²⁸

In the form of lettering used on the charts an indifferently written *u* or *v* (see for example the *virgales* in Benincasa's chart 1467) could easily have been mistaken for a *d*, and so, for the author of the 'Book of Knowledge' Wales became possessed of a city called *Dirgales*. It is difficult to see how this mistake could have arisen, except as a result of writing up a journey on the basis of a map—one might even be more definite and say upon the basis of a portolan chart of Catalan origin. The author evidently arrived at his *eleven* great cities by counting the names which were written in red or in some other distinctive fashion upon his map. It was customary among the chart-makers and chart-copiers to emphasize the more important names in this way, and in the early part of the 14th century the number so distinguished in England was usually from ten to fifteen: those 'cities' named by the author were amongst those always given special treatment, if any were, and so were the names *Gales* and *Uirgales*.

There is nothing in the list to suggest knowledge of the monkish *mappae mundi* like those by Ranulf Higden and the 'Hereford' map, in which the names mostly relate to places of ecclesiastical importance, e.g. *Deram* (Durham), *Lincol*, *Eborum* (York), and *Exeter*.

No traveller in Wales could have visited a city called *Dirgales*, while no one living in Wales and no sailor frequenting Welsh ports would have spoken of such a place. This suspicion that some of the author's 'journeys' were made on maps receives support from such statements as, 'I left *Inglaterra* in a boat and reached the island of *Irlanda*, which is a short crossing of a mile'. Leaving *Irlanda* he sailed to other islands, among which was *Ibernia*. From the context

²⁸ See for example the charts by G. Benincasa, 1467, and G. Calapoda, 1552, both reproduced in Nordenskiöld's *Periplus* (1897), plates 33 and 25 respectively.

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his Ibernica would seem to have been Iceland, but the author got his notes mixed up a little, because he cited as among the peculiarities of the island that there were no snakes and other venomous things, and that 'there are trees and the fruit that they bear are very fat birds. These birds are very good eating whether boiled or roasted'. It is more likely that the Friar had read accounts like those by Giraldus Cambrensis, in his *Topography of Ireland*, of birds called 'bernacles' which begin life as 'gummy excrescences from pine-beams floating in the water' and eventually being 'well covered with feathers take their flight into the free air',²⁹ than that he saw fat birds growing upon the trees of Iceland! The bird-producing trees of *Ireland* were well known (by repute!) at the period when the 'Book of Knowledge' was compiled, for Sir John Mandeville was made to tell how, when the people of the land beyond Cathay showed him wonderful trees 'I told them of as great a marvel . . . I told them that in our country were trees that bear a fruit that becomes birds flying'.³⁰ The trees, he explained in another passage, grew upon the shores of the Irish Sea.

It transpires then, that for the Friar, a little knowledge proved to be dangerous, as it often does when places-name are involved.

On another map, the great Marine Chart made by Martin Waldseemüller at St. Dié in Lorraine in 1576, *Surgalles* (via the form *S. Galles*) became the name of a cape called after a saint, *C. de S. Gale*.

Attempts to record names that have been given by word of mouth throw light upon other problems than those already discussed; they may, for example, indicate the nationality of the person by whom the information was brought to the map-maker, if not of the cartographer himself. This is illustrated by the maps in a little printed manual for seamen preserved in the Bodleian Library and discussed in ANTIQUITY.³¹ The volume is probably the 'almanack with a chart of the coasting part of England, in a small portable volume, bound and printed on velum or rather Parchment by Winken de Word, An. 1520', that John Bagford mentioned in a letter to Thomas Hearne, who was assistant-keeper in the Bodleian Library in the early years of the 18th century.

Only their positions on the maps enable us to recognize *Quicoitbit*

²⁹ *The Topography of Ireland*, in *The Historical Works of Giraldus Cambrensis*, ch. xi, ed. T. Wright. Bohn, London (1863), p. 36.

³⁰ A. W. Pollard, *The Travels of Sir John Mandeville, the version of the Cotton Manuscript*, London, 1900, p. 174.

³¹ I. G. Philip, *Early Maps*, ANTIQUITY, 1937, xi, 486-9; E. G. R. Taylor, *Early Maps and Tide Tables*, *ibid.* 1938, xii, 219-23.

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and *Quiquesale* as Kirkcudbright and Kinsale respectively, but the forms of the names point to the intervention of a French-speaking person—it is indeed likely that the maps were prepared for sailors engaged in the Bordeaux wine trade. *Quisale* would have been sufficient for Kinsale, and this repetition of the first syllable is an example of a mistake that often appears in early manuscripts due to a tendency to repeat something already written. The same tendency was responsible for the naming of two islands at the mouth of the Bristol Channel, *Londay* and *Canday* respectively, on the map of northwestern Europe in the *Mariner's Mirror* (1588), which was an English edition by Anthony Ashley of the atlas of charts called *Spieghel der Zeevaert*, published by L. J. Wagenaer of Enkhuizen in 1585.

Londay is quite a usual map-rendering for Lundy, but there are no grounds for substituting *Canday* for Caldy, and as far as I know the 'Mariner's Mirror' is unique in this respect. The only reasonable explanation is that, having written *Lo-nday*, the engraver unthinkingly followed it with *Ca-nday*.

This map of Wagenaer's also provides an illustration of the way in which the nomenclature of a map may vary in its various parts according to the reliability of the information available to the compiler. The map was originally prepared in the Low Countries, and it would seem that Wagenaer's contacts were more with the eastern coasts of England and Scotland than with the western ports.

The names between London and Whitby are in their correct order, and if not spelt correctly are clearly recognizable—they are *London*, *Colchester*, *Ipswich*, *Yarmouth*, *Cromere*, *Lyn*, *Boston*, *Hull*, *Flamborough*, *Scarborough*, and *Whitby*. Round the Welsh coast on the other hand we have the following:—*Abergel*, *Carminia*, *Bendeser*, *Montlais*, *Stalmuyl*, *Newport*, *St. Davide's*, *Milford*, *Cimby* and *Armezín*. In this list we can readily recognize Abergele, Newport (Pem.), St. David's and Milford, and can make suggestions concerning all but one of the others, but *Montlais* defies identification.

Bendeser stands for Bardsey, and *Carmarnia* seems to have been meant for *Carnua* (a rendering of Caernarvon common to the portolan charts), although it may be compounded of that name and *Conuai* (Conway). *Stalmuyl* retains sufficient of its original character to be identified with *Stidwal*, by which St. Tudwal's Island is often indicated in the portolan charts. *Cimby*, for Tenby, illustrates a common error due to the similarity between *C* and *T* in early manuscripts, supplemented by some careless copying which converted *en* into *im*.

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Armezín, taken by itself, would be as meaningless as Montlais, but its position as the next port to Tenby suggests that it may be the result of some foreign sailor, hearing the name Carmarthen, writing down what a Dutch engraver took to be Armezín (Ar-me-zín). It may, on the other hand, have been meant for *Armez* (one syllable like *Orme's* in Great Orme's Head) *in*, which in turn was meant for Worm's Head. In respect of such names we can do little more than guess (although even guesses may be disciplined) and it is clear that Wagenaer knew much less about the Welsh coast than he did of those washed by the North Sea.

The names between Abergele and Milford are about equally spaced, and since Stalmuyl comes next to Newport, almost the whole of the coast of Cardigan Bay—more than 100 miles including several harbours and ports—has been suppressed.

For the opposite coast of Ireland the chart is even more difficult to interpret. Going from south to north we have *Ercloe*, *Wexford*, *Duuetnes*, *Hothe*, *Lantey*, *Bowley*, *Garni cast*, *Arglas*, *Ergla*, *Cnochfeques*, *Rusto* and *Dunlyth*. Wexford, probably the most frequented by continental sailors of all those ports, is clear enough, but if *Ercloe* means Arklow it is placed south instead of north of Wexford. *Hothe* stands for Howth, and *Duuetnes*, next to it, looks as if it might have originated in one of the many early renderings (or misrenderings) of Dublin, e.g. *Dunuelin* on the 14th century portolan chart by Perrinus Vesconte.³² *Lantey* is most likely Lambay Island (although the name is placed on the mainland as it is on the anonymous map of 1534 and on several portolan charts, such as one by Giovanni Martines, 1582). A less likely guess is that it may represent Laytown, south of Drogheda.

Bowley, which Ortelius³³ gives as *Bewley*, is evidently a phonetic representation of Beaulieu, near the mouth of the Boyne. *Garni Cast* seems to be compounded of Carlingford and Grene Castle, names placed close together on contemporary maps—the map of Ireland in the little French sailing manual already mentioned gives *Carnifort*. *Arglas* and *Ergla* seem to be Ardglass duplicated, and *Cnochfeques* (Knocfergus on the Ortelius map of Great Britain and Ireland, 1570) stands for Carrickfergus, while *Rusto* signifies Portrush, and *Dunlyth*, Dunluce.

It is clear, therefore, that while each of the names given between London and Whitby can easily be recognized, one who has not made a study of Welsh and Irish place-names might find considerable difficulty

³² Reproduced in A. E. Nordenskiöld *Periplus*, Stockholm, 1897, plate vii.

³³ Map of Great Britain and Ireland in the Ortelius Atlas of 1570.

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in identifying many of the names given on these coasts. There is also a corresponding deterioration in the delineation of the coastlines.

Wagenaer's charts were well known to English seamen, who called them (and, through them, chart books generally) *Waggoners*, but in the light of the foregoing notes upon one of them, we may perhaps be inclined to sympathize with Luke Fox, who spent several months in a vain search for the northwest passage, and who, offered money to buy books, refused to take any with him, for the two-fold reason that sailors at sea had no spare time, and that if an emergency arose it was more important to act at once than to rush away and consult a waggoner.³⁴

The object of these notes is to indicate some of the various ways in which a study of the map-names of a limited region can be approached. That they relate mainly to Wales means no more than that Wales is an area in which I am professionally interested and by descent connected, and in different ways and in varying degrees any other part of our island home would repay similar attention.

Although here concerned primarily with early maps, it may be of interest to draw attention to the attitude of the Ordnance Survey towards place-name problems when the original survey maps were being prepared.³⁵

In 1831 a certain Alfred Thomas of Carmarthen wrote to the Map Office at the Tower offering to assist the Ordnance Survey in revising the place-names of Cardiganshire, adding, 'for being conversant with the Welsh orthography, and a variety of other circumstances necessarily attendant on such a Survey in Wales, will I flatter myself render me fully competent to complete such an undertaking to your satisfaction'. Mr Thomas stated that he found a great many mistakes and omissions, and expressed the opinion that such matters must present great difficulties to the English surveyors, not only on account of their ignorance of the Welsh language, but also because 'very few of the natives who speak the Welsh language know anything about its orthography'. He pointed out, also, that many buildings and natural features took their names from the stream near which they were situated, and complained that many such names were omitted.

The letter was sent to the Surveyor responsible for the map that

³⁴ Luke Fox, *North-West Fox, or Fox from the North-west passage*, 1635.

³⁵ Information from early letter books in the Ordnance Survey archives, examined by kind permission of the Director General, during the course of investigation into the history of geology in this country.

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was criticized, and it brought from him a very spirited rejoinder. In it he said, 'Had Mr A. Thomas better pretensions to the qualifications which he flatters himself he so fully possesses, his observations might be more tamely submitted to by the Assistant Surveyor whom he treats so unceremoniously. In making this observation upon Mr A. Thomas' being unqualified for interfering with the Authority for names on the Ordnance Map, I do not do it from any personal acquaintance, I never so much as heard of his name before—it is from his own letter his knowledge of Welsh must stand condemned, for it is certainly not so perfect but he may yet learn how to spell if he carefully reads the Ordnance Map of Caermarthenshire;³⁶ I allude to the name Duffryn, which if written as Mr Thomas has it "Diffryn" it would indeed be diverting to his countrymen'.

Then, having pointed out other inconsistencies in Mr Thomas' remarks, he continued 'Mr A. Thomas' torrent of invective against the Gentle streamlets which so peacefully pursue their curly course by numerous habitations of mud and wickerwork in the aforesaid county, each of which takes its name from the streamlet or rill, is one objection that will not hold good as a general rule, as writing such names often creates confusion in a whole dingle, and it is already agreed by the best authorities in Caermarthenshire that there are too many of such names written as Mr Thomas sees wanting. If the Thames had been one of these streamlets or rills, and if London had been called "Thames side", surely Mr A. Thomas would be very likely after a little consideration to discover the name of the stream from the data already given'.

He expressed the opinion that Mr Thomas was not likely to be competent to render the service he offered, and pointed out that unskilled assistance 'retards the progress of the work, and contributes towards filling the cup of bitters more than my limited powers of description can possibly detail'. Finally, he apologized for what might have been regarded as an unseemly letter to his superior officer—'I have to regret having used so much freedom of language in thus addressing you, Sir, but I trust the Circumstance of so unjustifiable an attack upon the acknowledged orthography of the Caermarthen sheet will be an apology for the warmth of my feelings'.

Captain Mudge did not forward the Surveyor's letter to Mr A. Thomas, but, instead, explained the steps which were taken to secure

³⁶ The Assistant Surveyor was himself wrong in writing Caermarthenshire instead of Carmarthenshire.

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correct orthography on the maps. 'We have' he wrote, 'long been aware of the difficulty, and I might say, impossibility of spelling the Welsh names of places so as to be satisfactory to those who are considered the best authorities : and it has not infrequently happened that to guard against errors of the kind, we have had to erase from the Copper Plate, and enter again in its original state, the same name more than once ; but we have lately adopted a system which answers the end perhaps as completely as may be possible. The Surveyor who is employed in the County . . . transmits for the Engravers . . . a tabular list of *all* the names on the map, showing at one view, opposite to *each* name, all the authorities that have been consulted, in addition to such as are kept here for the same purposes, viz. :—*Camden, Carlisle, Index Villaris, the Population abstract* and others—The local authorities which we have derived most advantage from, have been Clergymen, and with the Parishes of course they ought to be especially conversant, but in order further to insure accuracy as far as our means and foresight can extend, the Welsh work is consigned to the care and superintendence of natives of Wales whose labours are almost entirely confined to that country'.

From this it would seem that if mistakes occur in the early Survey maps they were not due to carelessness on the part of the Surveyors but to the inaccuracy of the information given to them, or, occasionally, as the letter now to be mentioned shows, to pressure from high places. In 1833, Sir Henry Verney, M.P., wrote to the Map Office 'respecting the correction of names in the southeast of the Banbury sheet' and Captain Mudge's reply contained the following illuminating passage :— 'as you have a perfect right to spell your own place as you may think proper Cleydon shall be substituted for Claydon if you wish it to be so ; but I find all authorities, modern and ancient, prefer the *a* to the *e* : for example, in Domesday Book it is *Claidone*, in Speed's Atlas, published in 1614, all the Claydons in Buckinghamshire are *Claidone*, also in the Index Villaris published in 1680, likewise *Claydon*, in Carlisle's Topographical Dictionary, 1808, *Claydon*, and in Lewis' Topographical Dictionary, not long published, *Claydon*. . . . I hope the map will be advanced sufficiently in the course of a few days to allow me to send you a Proof, and to request you will have the goodness to examine it and see if we have made any more blunders'.

The suggestion to adopt Sir Henry's spelling was not acted upon. In all editions of the Survey maps the Claydons in Bucks are spelt with an 'a', and not with an 'e'.

Notes and News

ARCHAEOLOGY IN UZBEKISTAN

These notes were received at Field Museum of Natural History, Chicago, from the Society for the Promotion of Cultural Relations with Foreign Countries (VOKS) in Moscow. The excavations were conducted under the joint auspices of the Historical Institute of Material Culture (IIMK), Leningrad and the Uzbekistan Committee for the Preservation and Study of Monuments of Material Culture (UZKOM-STARIS), Tashkent.

This information supplements recent articles¹ on archaeological discoveries within the confines of the Soviet Union.

1. The most important find² during the past few years has been that of a Neanderthal skull associated with Mousterian culture in a large rock-shelter near Tashkent. This is the first discovery of Neanderthal man in Central Asia—a most important link in the chain of distribution of Mousterian sites in Asia, Africa and Europe.

In southwestern Uzbekistan, one of the most arid sections of the Soviet Union, A. P. Okladnikov³ in cooperation with V. D. Zaporozhskaya excavated Teshik-Tash rock-shelter, which lies in the Zautolosh Darya gorge and at about 5000 feet above the level of the Turgan Darya.

The fragmentary skeleton of a young child, seven or eight years of age, was excavated. After reconstruction at the Anthropological Institute in Moscow the skull presented characteristic Neanderthaloid traits. Associated with the skeleton were stone tools of Upper Mousterian types (FIGS. 1-4). On many bones (FIG. 5) there were cutting marks made by flint tools but no bone implements were found.

Okladnikov states that the closest analogies to the cultural deposits from Teshik-Tash are from the Caucasus, Crimea, southern Kurdistan, and Palestine.

2. The Surkhan Darya Expedition made some preliminary surveys near Baisun. Two corridor-like caves, containing large accumulations of bones of wild and domesticated animals, were excavated at

¹ See footnote in *ANTIQUITY*, 1940, XIV, 404-26.

² See H. Field and E. Prostov, *American Journal of Archaeology*, 1931, XLIII, 331-2; A. P. Okladnikov, *Vestnik Drevnei Istorii*, 1939, no. 7, 256-7, and *Asia*, 1940, XL, 357-61, 427-9; and A. Hrdlička, *Science*, 1939, XC, no. 2335, 296-8.

³ See *Asia*, 1940, XL, 357-61, 427-9.

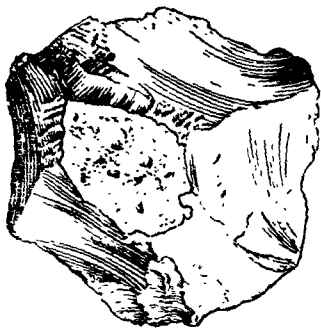


FIG. 1

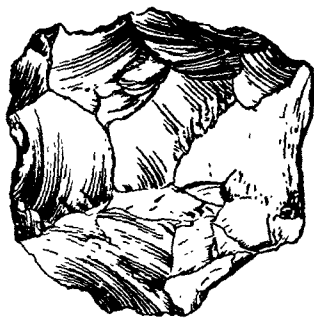


FIG. 2

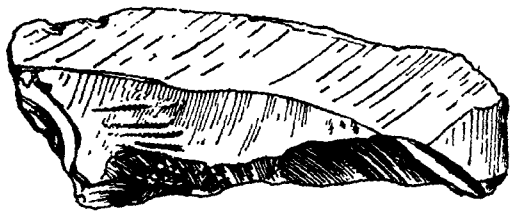


FIG. 3

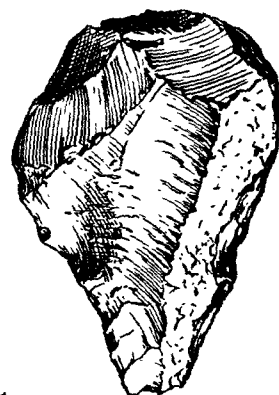
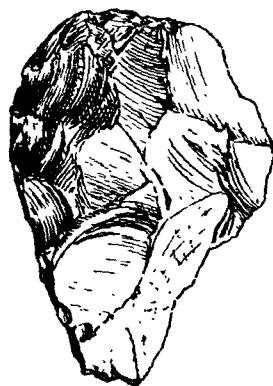


FIG. 4

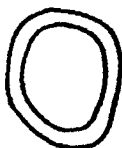


FIG. 5

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Kaflan Dara and Dulta-Khan. Fragments of ancient vessels were also found. These caves evidently served large beasts of prey as places of refuge and the bones are the remains of their quarry.

In Ob-Angor cave a smelting furnace, in the form of a vessel, two metres in height, with openings in the sides for the draft, was found. Tenth- and eleventh-century sherds were unearthed. Two cultural levels, yielding charcoal, animal bones, and typologically palaeolithic flint implements were found beneath stones in a cave situated in the Kurgan Darya gorge.

Palaeolithic, Neolithic and Iron Age strata were found in excavating caves near Machai in Amir-Temir. In the lowest levels typologically Mousterian implements, including a hand-axe, a discoidal nucleus, and a scraper came to light. These implements resembled those from Teshik-Tash. To the east of Baisun, in the gorge which leads from the Temir-Ulde river, palaeolithic implements and animal bones have been found.

Since Soviet archaeologists are continuing their researches in many areas of Central Asia we can feel assured that new important results may be expected.

HENRY FIELD and EUGENE PROSTOV.

HORSES, CHARIOTS AND BATTLE-AXES

Dr Clark's timely and convincing refutation of the pan-Germanist theory of the origin of the horse-chariot complex could have been made still more conclusive had not his self-imposed limitation excluded a fuller examination of the evidence from Hither Asia. His admission (ANTIQUITY, xv, p. 56) 'the appearance of light war-chariots, drawn by horses and fitted with spoked wheels for speed came relatively late in the history of the old culture-lands, and it was certainly sudden, is a gratuitous present to his adversaries.

(1) *The antiquity of the horse in Hither Asia* can now be established thanks to Ghirshman's excavations at Tepe Sialk in southwestern Iran.¹ These put into their proper context the famous remains of *Equus caballus Pumpellii* from Anau; for Anau I-II is more or less parallel to Sialk I, and Sialk I is on the most modest estimate early 14th millennium. Moreover, remains of the same horses (albeit only two teeth) have been identified at Sialk II,² still in the 14th millennium.

¹ Ghirshman, *Fouilles de Sialk*, 1938, I, 77, 87, 103.

² Vaufray, in Ghirshman, *Fouilles de Sialk*, 1939, II, 196.

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So there were horses in southwestern Iran by that date. The pictogram, 'ass-mountain' in the Jemdet Nasr tablets³ can therefore be accepted at its face value as meaning what the conventionalized ideogram ANSU.KUR.RA means in later texts, viz. 'horse' and therefore attests at least an acquaintance with horses in Mesopotamia itself by 3000 B.C. Finally the accounts just published by Gadd from Chagar Bazar in North Syria⁴ show that yokes of horses were being kept in what was later Mitannian territory by the end of the 19th century B.C.

(2) *The antiquity of the chariot in Hither Asia* is equally attested by tablets and sealings of the Uruk period in Sumer⁵ and by models from Gawra VIII in Assyria.⁶ These were doubtless the heavy vehicles familiar from graves and monuments of the Early Dynastic age. Whether they were drawn by horses or asses is of course unknown. In either case the transfer of the ox's harness to an equid (it would fit an ass no better than a horse) is thereby referred to the IVth millennium. It is noteworthy that the Sumerians harnessed asses to the plough. The occurrence side by side of sledges and wheeled vehicles in the Uruk tablets, as later in the Royal Tombs of Ur, is likewise significant.

(3) *The descent of the light horse-chariot of the IIrd millennium* from the heavier vehicle of the IIIrd cannot be traced in the archaeological record alone owing to a quite accidental break in that record. It seems to be due to a change of fashion in glyptic and monumental art. Early seals and monuments like the 'standard' from Ur depict chariots in battle scenes. After 2500 B.C. battle scenes were no longer fashionable subjects for seals, and no monuments comparable to the standard happen to have survived. If there be no chariots on the Stele of the Vultures from Lagash, a little later the written record mentions teams of asses for chariots supported by the temples of the same city.⁷ The gap of a thousand years that separates representations of chariots in the Orient allows ample time for substantial structural improvements; the written record shows that there are no grounds for assuming any interruption of the tradition.

(4) *A Mitannian centre for chariotry* in the IInd millennium is rightly accepted by Dr Clark. The piedmont-steppe zone of North

³ No. 129 in Langdon, *Pictographic tablets from Jemdet Nasr* (Oxford edition of *Cuneiform Texts*, VII).

⁴ *Iraq*, 1940, VII, 31.

⁵ Falkenstein, *Archaische Texte aus Uruk*, no. 744.

⁶ Speiser, *Excavations at Tepe Gawra*, 1935, p. 74.

⁷ Deimel, 'Sumerische Tempelwirtschaft zur Zeit Urukaginas' (*Orientalia*, 1931, II), 105.

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Syria, later the centre of the Mitanni State, is well adapted for the use of the chariot in war. It is adjacent to wooded mountains where even birch-trees grow. But there is not a scrap of direct evidence to connect the development of the light war-chariot fitted with spoked wheels and drawn by horses with the Aryan rulers who established themselves there in the 15th century. Chariots had been known in the region from the 14th millennium as the models from Gawra show. They were being used and drawn by horses by 1800 B.C. at Chagar Bazar. By that date the chariot-horses were already under the charge of five grooms with a 'trainer' over them. This 'trainer' must rank, as Gadd* remarks, as the predecessor of the celebrated Kikkuli of Mitanni whose treatise on horse training contains Aryan numerals. These numerals lose much of their supposed significance now it is known that trainers were training horses in North Syria nearly three and a half centuries before the occurrence of the first Aryan names; in close on four hundred names from Chagar Bazar all are Semitic or Hurrian in the 19th century. That the light chariot was invented here is quite possible—though of course there were chariots in the Indus valley (pre-Aryan!) and elsewhere in the 11th millennium. In any case the advance had been made and had penetrated even to Egypt and Greece before 1500 B.C. The first king of the Aryan dynasty, Shaushshatar, did not ascend the throne before 1450 B.C. Only the improved vehicle 'in which the axle was attached to the rear of the carriage' may on the extant evidence be later than the establishment of Aryan rulers in Mitanni. Only this improvement therefore could possibly be attributed to their patronage of local wheelwrights.

(5) *The possibility of correlating horses and battle-axes* is not, funnily enough, affected by any of these arguments. Dr Clark may indeed be ill advised in accepting the bones assigned by Schliemann to Troy II as supporting the correlation; the far more reliable American excavators⁸ have so far reported no horse bones before Troy VI. Nor is it clear that the bad drawing on the celebrated cylinder from Kül-tepe can be accepted as evidence for any particular species of equid. On the other hand in Assyria and Mesopotamia there are some neglected objects which must be accepted as battle-axes, degenerate or undeveloped if you like,⁹ dating from Al'Ubaid to Early Dynastic times (i.e. 14th and

* *Iraq*, 1940, VII, 31.

⁸ *AJA.*, XLI, 595.

⁹ I discussed these in my Presidential Address to Section H of the British Association, *AJA.*, XLIII, 16 ff.

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early IIIrd millennia). Moreover there is a very fine copper bipennis from a IVth millennium layer at Susa¹⁰ as well as several shaft-hole axes of stone. So battle-axes do seem more or less contemporary with chariots drawn by equids even in Elam and Mesopotamia, but not further east. The written records, however, do not help to connect either axes or equids with Aryans or other Indo-Europeans from Europe or anywhere else.

V. GORDON CHILDE.

DEAD-FALL TRAPS

In connexion with the distribution in Europe of the Dead-fall Traps discussed in the December issue of *ANTIQUITY*, it is interesting to note that both Aeschylus and Aristophanes bear witness to the use in classical times of a trap of similar mechanism (*ἵπος*). Thus in the *Prometheus Vincetus* (line 365) Prometheus speaks of himself to Oceanus as weighted down as in a trap under the roots of Aetna (*ἰπούμενος ῥίζαισιν Αἰτναίας ὕπο*).

So too in the *Knights* (line 924) Kleon describes himself as being trapped beneath the weight of Income-tax (*ἰπούμενος ταῖς εἰσφοραῖς*). It is clear from these quotations that the trap was in general use and that it must have worked on the same general principle as that described by Mr Hornell.

G. A. AUDEN.

IMPRESSIONS OF GRAIN ON POTTERY (PLATE I)

It occasionally happens that impressions of grain or other seeds are observable on the surface of shards of prehistoric pottery. The systematic work of Georg Sarauw, who examined and identified over 1500 such impressions on Danish pottery, has been summarized in a recent paper in *ANTIQUITY*.^{*} Inasmuch as the impressions may be more commonly met with than the grain itself, they may, when properly examined, provide valuable evidence as to the prevalence of different varieties of cereals and other useful plants at the various periods to which the respective vessels or shards are assignable. If a systematic study of this kind were to be carried out over the whole of Europe as well as over large tracts of the adjacent continents, there seems little doubt that something like the complete history of the early cultivation of corn and other plants would thereby be unfolded.

¹⁰ *Memoires de la Délégation en Perse*, xxv, 181-2, fig. 4 ; *L'Anthropologie*, xl, 229, fig. 4.

^{*} *ANTIQUITY*, 1938, xii, 136-41.

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Before the present war put an end to such activities the National Museum of Copenhagen had actually made a start on this Herculean task. In the early summer of 1939 Hans Helbæk, assistant to Professor Gudmund Hatt, came to England to study as much of our dated pottery as possible. He discovered a certain number of impressions of grain that had escaped our scrutiny, but the detailed analysis of his results awaits publication. He found that grain-impressions occur far less frequently on British than on Danish pottery, from which he inferred that domestic pot-making took place under somewhat different circumstances in the two countries, the Danish housewife perhaps mixing her clay in the neighbourhood of the corn-bin. Such impressions are found only on hand-made pottery of the coarser sort; slip-coated vessels are generally sterile and not worth spending time over.

Among Helbæk's discoveries were the impressions of about ten grains of barley on the under-side of the base of a small complete vessel of Iron Age A type, but without history, preserved in the Brighton Museum. PLATE I shows this example, and also a wax positive squeeze taken from it and coloured naturalistically.

Helbæk's identifications were made by pressing a suitable plastic material into all suspected cavities on the surfaces of the vessels or shards that he was examining. The shape of the resulting positive corresponds to that of the seed (or, it may be sometimes, small stone) that made the impression, and in the case of a seed the form and dimensions afford the necessary clue to its identity. E.C.C.

BURNISHING STONES FOR POTTERY (PLATE II)

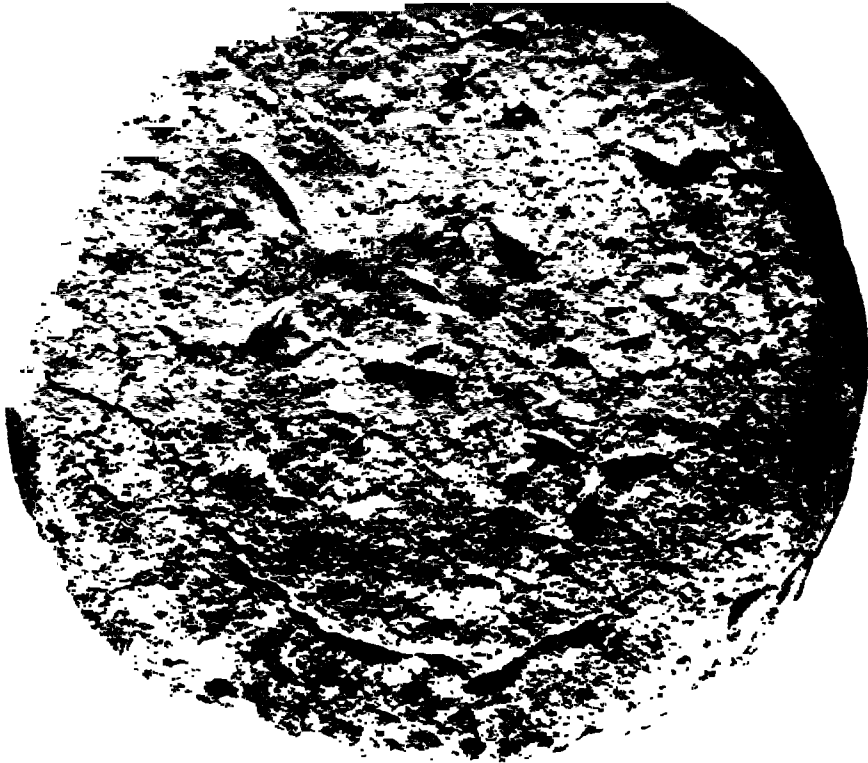
In his recent article describing the modern hand-made pottery of Jutland, Axel Steensberg refers to the use of a flint for smoothing and burnishing the slip, or outer coating of smooth clay.¹ He says that the smooth, round flint which is employed for this purpose only becomes really good after being used for about twenty years, during which time it acquires a lustrous polish as a result of friction with the silica in the clay. At my request Steensberg sent me the accompanying photograph of two such lustrous flints from western Jutland, recently employed for this purpose (PLATE II, *upper*).

For comparison with these the lower figure in the same plate shows two polished triangular pebbles that were found with Iron Age pottery near Horsted Keynes, Sussex.² This pottery, which is attributable to

¹ ANTIQUITY, 1940, XIV, 150.

² *Sussex Arch. Coll.*, 1937, LXXVIII, 253-65.

PLATE I



IMPRESSIONS OF GRAIN ON BASE OF POT OF IRON AGP A
(Brighton Museum)

Above The pot-base from below, showing impressions

Below Wax squeeze (positive), naturalistically coloured

Ph. E. C. C.

PLATE II



BURNISHING STONES FOR POTTERY

Above Modern Danish from West Jutland, used for burnishing hand made black pottery

Ph from Axel Steensberg

Below Polished triangular pebbles from Southern 'B' pottery site near
Horsted Keynes, Sussex

Ph E.C.C.

NOTES AND NEWS

the early first century A.D., was found by Mr H. R. Hardy in considerable quantities in a length of ditch that had been cut into clay that is now being dug for brick-making. The predominant features are those of the so-called ' South-eastern B ' ware, viz., eye-brow or swag decoration, impressed circles, omphalos bases, and out-curling lip above high-swelling shoulder or low-swelling belly ; some Belgic influence is also traceable. Some of the vessels have been coloured with haematite, and some have the eye-brow decoration reinforced with black paint. Although actual kilns have not yet been identified, there seems good reason for regarding the site as that of a potter's workshop. None of the vessels showed any sign of having been used for cooking food, as is usually the case in Iron Age habitation sites ; in fact, a considerable proportion of them are only partially baked. Occasional lumps of clay, vitrified on one side, may be fragments of kilns, and at least one piece of impure haematite was found, embedded in a lump of local concretionary ironstone.

It seems most probable, therefore, that the polished triangular pebbles from this site may have been used for burnishing the vessels during manufacture, and, if so, their similarity to their modern Danish counterparts is striking. E.C.C.

Subscriptions, 1941

In view of loss of mails at sea it is possible that some payments for 1941 have failed to reach ANTIQUITY. Reminders were posted in April. Unless acknowledgments have been received (which in their turn may be lost) it can be taken that the subscription has not arrived, and a duplicate remittance will be appreciated. Any subscriber who has not had the March number should notify this at once to 24 Parkend Road, Gloucester.

To our subscribers in the British Isles who have not yet sent their subscription may we say that an immediate payment will be a great convenience.

Reviews

PREHISTORIC ENGLAND. By GRAHAME CLARK. *B. T. Batsford*, 1940. *pp.* 120 and 110 *photographs* ; *map and drawings*. 8s 6d.

If the present war has put a temporary stop to archaeological research, it has given an opportunity for stock-taking—a periodical necessity which is apt to be crowded out by the normal peace-time work of collecting facts. While, therefore, the spade is temporarily diverted to the uses of war, it is fitting that the mass of archaeological detail that it has disclosed in recent years should now be sifted, sorted and assembled. This will not only make it easier to appreciate the results of research up to date, but it will indicate the directions in which future investigations may most usefully be made.

Two of our foremost prehistorians have now given us two quite different syntheses of British archaeology—one for archaeologists and one for the general public. Each approaches the subject from an entirely different angle ; each is admirable and most welcome.

The excavations which provide us with most of our data are largely financed by public subscription, which in turn is dependent on public interest. The public therefore have a right to know what we have learnt through their subscriptions, and if we want them to subscribe again we must foster their interest. It is strange that this self-evident truth seems to have been so seldom realized by archaeologists, with the result that popular conceptions of our Prehistory are too often based on the writings of people who are noted for their descriptive powers rather than for accurate knowledge.

Dr Clark combines authority with an easy and lucid style. After an introductory chapter in which he sketches in outline the whole course of our Prehistory—no small achievement in itself—the succeeding chapters are devoted to a consideration of the various important aspects of man's life, each being looked at from a developmental rather than a purely chronological standpoint. These include the food quest, dwellings, handicrafts, mining and trade, communications, hill-forts, burials, and sacred sites. This rather novel method of approach has its advantages, and the collation of related facts which it entails introduces some refreshing and stimulating ideas. As the author himself claims, he writes ' of ancient remains . . . in terms of the human beings who built and used them '. This assuredly is the key to the popular interest in our prehistory, for ' deep calleth unto deep ', and in the last resort it is not things but people that appeal to us all most strongly.

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The immense amount of detail adduced by Dr Clark is truly astonishing ; one only hopes it may not prove a little embarrassing to the general reader, for it would be difficult to find a single site of importance in England and Wales that is not mentioned. This has necessitated a certain amount of conciseness in some places where rather more explanation might have been welcome. Will the general reader, for instance, make anything of dating 'on pollen-analytical evidence' (p. 76) without some further enlightenment? Even he, however, will feel a momentary quiver of surprise when he reads on p. 64 of 'the discovery of a lead pig inscribed "Claudius 49 A.D." '!

The publishers are to be congratulated on their enterprise in including this work in their 'British Heritage Series', lavishly illustrated, and yet sold at such a modest price. The 110 photographs are well-chosen, clearly reproduced and not spoilt by over-reduction. They include several magnificent aerial views by the late Major G. W. G. Allen. Archaeologists will enjoy this book no less than the general public.

E. CECIL CURWEN.

PREHISTORIC COMMUNITIES OF THE BRITISH ISLES. By V. GORDON CHILDE. *W. and R. Chambers*, 1940. pp. 274, 16 plates, 96 figures. 20s.

It would be difficult to exaggerate the sense of satisfaction derived from the study of Professor Childe's *Prehistoric Communities of the British Isles*. It is a book that demands and repays repeated reading. Nothing along these lines has yet appeared, for not only does it cover the whole of the British Isles (instead of the arbitrary fragment of Britain known as England and Wales), but it deals with all the known 'societies' in their mutual relations, both cultural, chronological, and especially economic. The condensation of so vast a theme into so readable a book is due to the author's happy facility for picking out salient facts and cogent arguments, avoiding the errors of assuming too much previous knowledge on the part of the reader on the one hand, and of over-description on the other.

Under the author's treatment one is enabled to watch the various peoples of the British Isles in their reactions and interactions down the centuries, like a seething cauldron ; moreover the chaos of the cauldron is reduced to the orderliness of a cinematographic distribution-map (if such a thing were possible). In order to do this he takes as his basis the succession of food-producing cultures of the lowland zone of England, from the Windmill Hill folk down to the Belgae, and numbers them as periods (Periods I to IX). Not only does he sketch the probable origin and salient features of each, but he attempts to show the results of their impact on their predecessors or on neighbouring 'societies'. Thus he argues very convincingly that the impact of the Windmill Hill neolithic farmers on the mesolithic aborigines, themselves part of the North European

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Forest population, produced the Peterborough and Skara Brae cultures ; further that the influence of the beaker folk upon the Peterborough people produced the food-vessel societies, while that of Skara Brae on the collared urn produced the encrusted urn. The synthesis is in many ways bold and original, but it is supported by evidence for which chapter and verse is given.

The present reviewer, for one, is grateful for the comprehensive account of the spread of the ' megalithic religion ', which is likened in its material effects to the spread of other religions such as Christianity. Different ' sects ' built different varieties of burial chamber or family vault, the characteristics and distribution of which—so confusing to the uninitiated reader of excavation reports—are comprehensively set forth and explained. The economic basis of this, as well as of other movements and cultures, is also examined, and its repercussions on other societies on both sides of the Irish Sea.

The factor of the time-lag in the highland zone and in Ireland is also taken into account, and evidence is cited suggesting that food-vessels may have survived in Ireland down to the southern English Late Bronze Age ; that the heirs of the Middle Bronze Age urn-folk can be distinguished in Limerick as late as the beginning of our era ; that iron was not introduced into Scotland before 200 B.C., and, into many parts, not till much later ; and finally that in the Hebrides bone bobbins of Iron Age B type (not to mention other Iron Age features) survived down to within the last hundred years.

Enough has been said to indicate the stimulating character of the book. It is a synthesis, and as such it is bound to be largely tentative, and subject to correction as a result of future discoveries. One of its main advantages will be that by clarifying and systematizing our knowledge up to date, it will indicate the directions in which future research will be most useful after the war. It is not to be expected that all will agree with everything that is said. It is not true, for instance, to say that ' on each block of Sussex Downland there is a causewayed camp, a group of flint-mines and a cluster of long barrows ' (p. 40). The actual distribution suggests two tribal groups, with the detribalization of the flint-miners—possibly an important economic point. The distributions of the two regional varieties of ' western ' neolithic pottery (p. 44) are so difficult to visualize from their description, and yet apparently so significant, that many headaches would have been saved by the help of a map. The following words do not present a convincing argument (p. 163) : ' Perhaps metal-workers formed a class apart, . . . Metallurgists must, then, be treated as a distinct society '. The words I have omitted adduce no reason for the ' must ', but only qualify and explain the ' class apart '. The possible detribalization of bronze-smiths may nevertheless be noted in connexion with that of the flint-miners just mentioned.

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The author argues (pp. 176-8) that the features distinguishing Late Bronze Age I in southern England are not due to ethnic immigration so much as to an influx of (detrified ?) Continental bronze-smiths (or should we call them 'technicians' nowadays, preceding the army of occupation ?) ; also that Deverel-Rimbury pottery is not earlier than Late Bronze Age II. The evidence is admittedly slender as yet, but at Park Brow and Plumpton Plain (site A) we have two settlements belonging to phase I ; the former yielded Deverel-Rimbury pottery, and the latter belonged to immigrant farmers who introduced the Celtic field-system. The culture of the Deverel-Rimbury folk was not really replaced or even absorbed by the Iron Age A invaders in southern England (p. 194). If one may judge from the ceramic record, which is particularly clear in Sussex, the resulting fusion might more accurately be termed an absorption of the Iron Age A folk by the Deverel-Rimbury population.

The great hill-forts of the Iron Age appear to the author to have been camps of refuge which may also have been used as walled farms (surely an incongruous, if not actually incompatible, association !) rather than embryonic 'cities'. The question of area is no argument, for almost all our permanently occupied hill-forts are larger than the 'cities' of Palestine and the Near East (Jericho, Lachish, Troy) which presumably formed the ultimate prototype. Their permanent occupation is attested by the presence of silos, or grain-storage pits, as well as considerable quantities of domestic refuse. Silos would not be needed in camps of refuge, occupied occasionally in an emergency. The Trundle (Sussex) has a fair number of silos and other evidence of occupation, but there are no traces of lynchetts on the virgin downland that surrounds the site ; the inference, therefore, is that the occupants kept corn, but did not grow it themselves. This argues industry and barter. The bleakness of the hill-top situation is no argument either, as most of the villages were similarly placed ; and it is not true to say that the evidences of occupation are generally concentrated under the shelter of the ramparts (pp. 198 ff.) The La Tène invaders (Iron Age B) who possessed a 'half-urban economy' derived partly from the urban civilizations of Magna Grecia and Etruria (p. 212), were mainly responsible for the development of our large hill-forts. Though the ramparts may have been constructed by the A folk against the invading B folk, yet the population that subsequently occupied the sites was a blend of A with B, and it is surely quite natural to see here a proof of their 'half-urban economy' in occupying 'cities' in imitation of Mediterranean peoples, even though these 'cities' do not entirely correspond with those of a fully urbanized society.

The book closes with a brief discussion of two problems which are intermittently a source of worry and speculation, namely, the identification of the Goidels and the Picts, respectively, in the archaeological record. Archaeologists

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are shy of these problems, probably because they involve other factors, such as linguistics, with which they do not feel entirely at home. It is true that comparative philology has been deprived of much of its potential charm by the heavy handling it has received from German professors, but it is a subject which, used with discretion, could be a most valuable handmaid to archaeology. In regard to the identity of the people who first introduced the Goidelic form of Celtic speech to the British Isles the author examines the claims of the possible candidates, and, while admitting that no solution of the problem is yet possible, feels that the archaeological evidence excludes every known candidate except the Beaker folk and their successors, the Urn folk. To the reviewer the linguistic aspect of this problem makes such an identification very difficult to accept, and he believes that when the solution to the problem has eventually been found, the arrival of the Goidels will be found to have taken place not earlier than the Late Bronze Age. The Picts, too, are surely the residual contents of the melting-pot into which all the earlier immigrants into Scotland gravitated.

The book is adequately illustrated and provided with full bibliography and index. The footnote references on each page are welcome, being so much handier than tiresome references to a bibliography at the end of the volume.

E. CECIL CURWEN.

MUSÉES ROYAUX D'ART ET D'HISTOIRE À BRUXELLES :
BELGIQUE ANCIENNE. Catalogue descriptif et raisonné par le Baron
[A]. DE LOË, conservateur honoraire. IV : La période franque. *Bruxelles :*
Vromant & Co., 1939. pp. 218 with 168 illustrations. 80 francs (16 belgas).

This excellent catalogue of remains of ancient Belgium in the Brussels Royal Museum of Art and History was written by one of the best students and connoisseurs of Belgian antiquities, a large part of which he had collected himself. He wrote this summary of his scientific work after he had retired in 1925 from his office at the Museum. The first part, referring to the Stone Ages, published in 1928, is known to the readers of ANTIQUITY from the review in vol. IV, 137 ; a second part (1931) was devoted to the Bronze and Iron Ages ; a third (1937) to the Roman period of Belgium, and the present volume brings the work to a successful conclusion. It is, as a former reviewer has said, a real manual of Belgian archaeology. The nucleus of the volume (pp. 47-190) is the short but impressive catalogue of antiquities exhibited in room IV of the Museum and in a show-case of room III. Their arrangement gives the sequence of the descriptions. The obvious advantage is that objects found together are generally described together, so that, for example, the contents of the separate cemeteries, e.g. that of Anderlecht, can in this way be surveyed as unities, the more as the original situation of the finds (in relation to a Roman road, etc.)

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and the circumstances of the discovery are indicated in brief. The literature relative to them is mentioned, and many illustrations help the reader who is unable to visit the Museum. A general introduction (pp. 7-46) sketches the historical background of the Frankish period, and gives a comprehensive survey of the objects mentioned in the catalogue.

There may be some doubts as to the extent of the territory attributed to the Ripuarian Franks (p. 9). The names of Odin and Thor should not be used (p. 11) for Woden and Donar, except as to the Scandinavian branches of the Germanic peoples. The controversies on the settlement of the Franks started by the work of Petri (1937) might have been mentioned, and I miss also (p. 37, n. 1, and p. 138, n. 1) the important article of Ernest Babelon on the tomb of King Childeric discovered at Tournai in 1653 (*Le tombeau du roi Childéric et les origines de l'orfèvrerie cloisonnée*, in *Mémoires de la Société nationale des Antiquaires de France*, 1924, LXXVI, 1-112). In connexion with the spur of Lavacherie (p. 110, n. 1) a mention of the dissertation of H. v. Mangoldt-Gaudlitz might have been useful also (*Die Reiterei in den germanischen und fränkischen Heeren bis zum Ausgang der deutschen Karolinger*, 1922). The opinion that the Frankish kings did not revisit the same royal villa until three years had passed (p. 17), is refuted by a glance at the few existing charters of the Merovingians, or at Mühlbacher's *Regesta* of the Carolingian dynasty. The hoard of Muysen lez-Malines, the coins of which do not go beyond the year 877, may rather point to the presence of the 'great army' of the Vikings from 879 onwards than to the later battle of Louvain in 891 (p. 150), if there exists any connexion with the invasions of the Northmen at all. The life of Bishop John of Thérouanne (p. 177), a new edition of which has been made by O. Holder-Egger in vol. xv, 2, of the *Scriptores* of the *Mon. Germ. hist.*, is attributed today to Archdeacon Walter, not to John de Colmieu. But these trifles are 'Schönheitsfehler' which may disappear in a second edition of this useful work, which I hope will be required in more peaceful times. The volume ends with a general index of this part, and with a list of the illustrations of the four volumes. W. LEVISON.

EXCAVATIONS AT OLYNTHUS. Part VIII. The Hellenic house: a study of the houses found at Olynthus with a detailed account of those excavated in 1931 and 1934. By DAVID M. ROBINSON and J. WALTER GRAHAM. Baltimore: Johns Hopkins Press; London, Humphrey Milford, Oxford University Press, 1938. pp. XXI, 370, 36 text-figures and 110 plates. £3 7s 6d.

This volume forms part VIII of the series describing the excavations at Olynthus which have been conducted at intervals since 1928 by the Johns Hopkins University Expedition under the direction of Dr D. M. Robinson. It

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contains a detailed description of the houses excavated in 1931 and 1934, those excavated in 1928 having been already published ; but it also contains an analytic study of the classic Greek house for which Olynthus provides unique material, the houses on the North Hill being securely dated to the last quarter of the fifth century and the first half of the fourth.

The historical and archaeological evidence for this dating is reviewed in the Introduction. This is followed by a description of the lay-out of the city, and an estimate of its population, which is calculated as having been, at the time of the destruction, about twelve to fifteen thousand. In the last chapter of part I the two standards of length in use are discussed and it is suggested that the reason why the Attic-Eubœic foot was gradually supplanted by the Attic-Aeginetan was perhaps ' the close commercial relations between Athens and Olynthus '.

Part II contains a detailed description of individual houses, beginning with the Villa of Good Fortune and the House of the Comedian (the mosaics have been previously published). In part III the houses are considered with reference to their planning, in part IV with reference to their construction ; in part V with reference to their equipment ; and all with reference to comparative material elsewhere.

The description is accompanied by occurrence-tables of important features and followed by an appendix of objects found in the houses, a general index, an index to Greek words and finally a concordance between plates and text.

Every house of importance is illustrated by a plan and at least one photograph. Objects too are fully illustrated.

The standard of plans and photography is high ; proof-reading has been exact. Insignificant omissions noted are the numbering of the fragmentary houses A-i, 9-10 on plate 109, and the compass-bearing on plate 91. It would have been a convenience if the page reference had been given when figures are referred to ; and if some of the illustrations of the finer mosaics from earlier publications could have been repeated.

The special value of the Olynthus excavations lies, of course, in the fact that the finds can be placed within established chronological limits, and thus provide a canon for various aspects of one phase of Hellenic civilization.

Each volume as it appears extends the range of knowledge to a fresh class of remains. By the publication of the present volume, houses and domestic equipment have now been added and the picture is steadily being completed. The faithful and objective recording reflects the methodical conduct of the expedition which is fortunate in having enjoyed the continuous direction of one man, both in the field and in the publication of the finds. W. A. HEURTLEY.

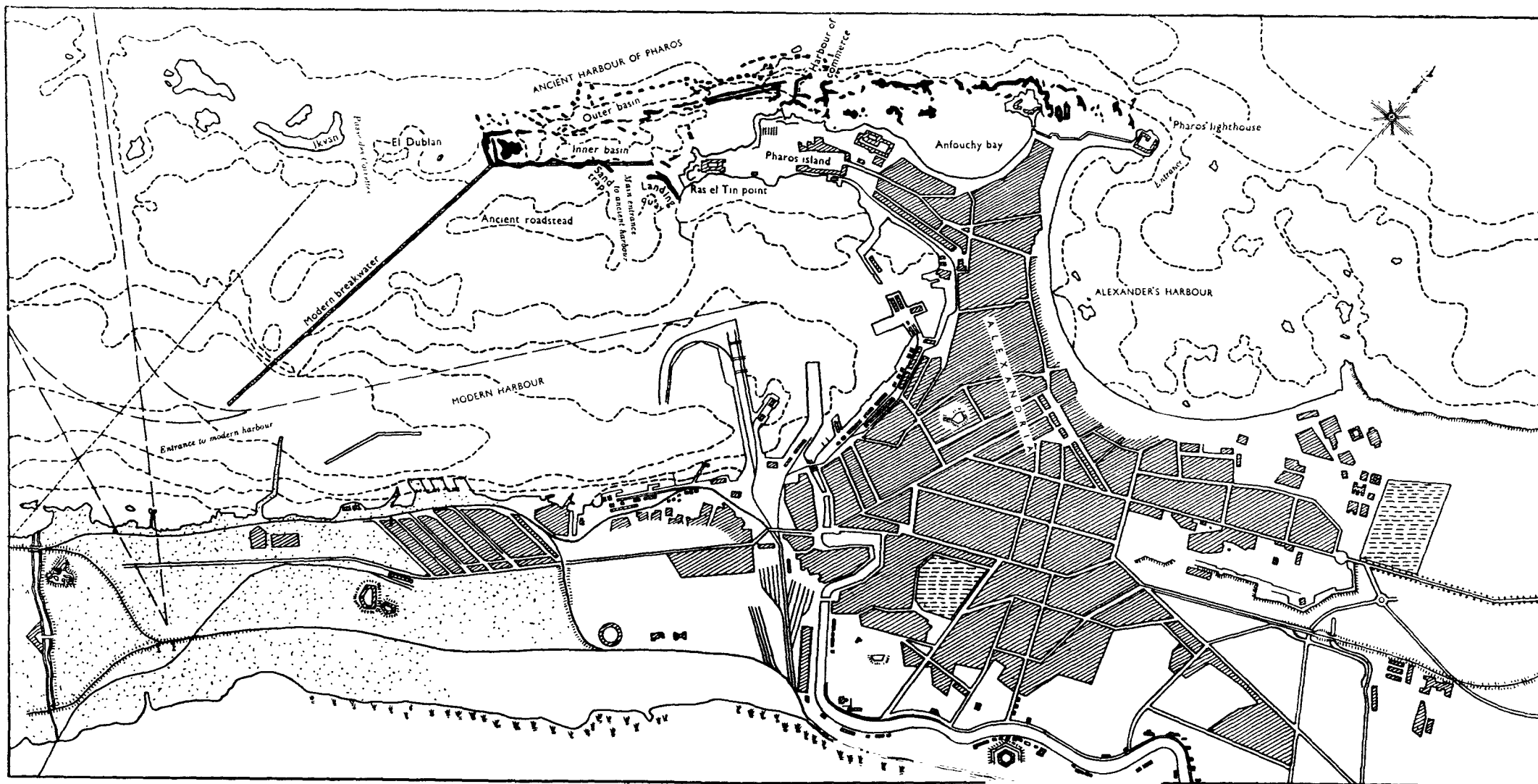


FIG. 1. ALEXANDRIA, SHOWING THE ANCIENT HARBOUR OF PHAROS, ALEXANDER'S HARBOUR, AND THE MODERN HARBOUR

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Ancient Harbours*

by SIR LEOPOLD HALLIDAY SAVILE, K.C.B.

SHIPBUILDING and harbour engineering are two of the oldest branches of our profession as Civil Engineers. It is well established that before 3300 B.C. the Egyptians built sea-going ships and that they made voyages to far lands to procure iron, lead, silver and other materials; and it is recorded on the Palermo stone that about 3000 B.C. king Seneferu built sixty great ships to go to the Syrian coast to bring cedar-wood for his works. In the British Museum is a stone statue of Bedja, son of Ankhu, one of the great shipbuilders of his days. The terminus of these voyages was on the Canopic branch of the Nile, where was situated A-ur or the Great Door, which Mr P. E. Newberry calls 'an ancient Alexandria of a period earlier than 3000 B.C.' Little is known about this harbour, except that Narmer, one of the earliest kings of the First Dynasty, considered it of great importance and decided to conquer the petty kingdom of Harpoon, to which it belonged. It was an inland port and probably had the disadvantages of that type, especially as it lay on the banks of an arm of the delta. The actual site of the port is not known, but I refer to it because it is the earliest harbour of which I have found mention and because it marks the beginning of the harbour of Alexandria, which, I think, has the longest history of any harbour in the world. I propose to devote some of my article to a study of the great schemes adopted on the Alexandrian site over a period of nearly 5000 years (FIG. 1). There have been four distinct harbour building periods—the harbour of A-ur, about 3000 B.C.; the great harbour of Pharos, soon after 2000 B.C.; the harbour of Alexander

* The Editors of *ANTIQUITY* are indebted to Sir Halliday Savile for permission to reprint his presidential address to the Institution of Civil Engineers and to the Institution for the use of the plans and other illustrations.

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the Great, begun in 332 B.C. ; and the modern harbour, which dates from A.D. 1870.

The Great Harbour of Pharos (FIG. 2) was typical of the pre-hellenic form of massive structure, far more massive than some of the great harbours of modern times, and it is well worth study. Its layout and the skilful use made of the configuration of the bed of the sea might have been the work of a modern harbour engineer. 'When', says M. Gaston Jondet, 'one examines the largeness of the project and ponders on the boldness of its execution, it becomes obvious that it was conceived by a sovereign power of unequalled breadth of view, a realistic genius capable of conquering and keeping the mastery of the Mediterranean sea'. Who the realistic genius was we do not know, for Egyptian history, curiously enough, has no record of this harbour. M. Raymond Weill attributes both its conception and its construction to the Minoan Cretans, who at that time were the greatest sea-faring power in the Mediterranean. It could not, however, have been made without the co-operation of the reigning Pharaoh, possibly Senusret of the Twelfth Dynasty, a famous builder of colossal buildings typical of the Egyptian, Minoan, and Mycenaean civilizations of those early times. This gives us a date somewhere between 2000 and 1800 B.C.

The harbour was based at its eastern end upon the island of Pharos, and at its western on the rock of Abu Bakar. It also took advantage of the submerged ridge running from Marabout point to the north of Pharos, and of the shelf which sloped from this towards the deep sea. From the bay of Ras el Tin at the western end of Pharos to the Abu Bakar rock there is a deep pool, bounded on its northern edge by the submerged ridge. It was by surrounding this pool with breakwaters and piers that the great inner basin was formed. Seawards of this another series of breakwaters, using the outer edge of the shelf, enclosed the outer basin. The two basins together formed a magnificent harbour about 300 acres in extent.

The entrance to the harbour was on the south, and the approach channel crossed the submerged ridge by the *Passe des Corvettes* between the Ikvan and El Dublan rocks. Between these rocks, the southern boundary of the harbour, and the island of Pharos, not then joined to the mainland of Egypt, was a sheltered roadstead for ships making the entrance against the prevailing northwest wind.

I will now try to give some idea of the construction of the works. On the right the entrance is flanked by a slightly-curved landing-quay (FIG. 3) running in a northeast-southwest line, founded on a firm mass

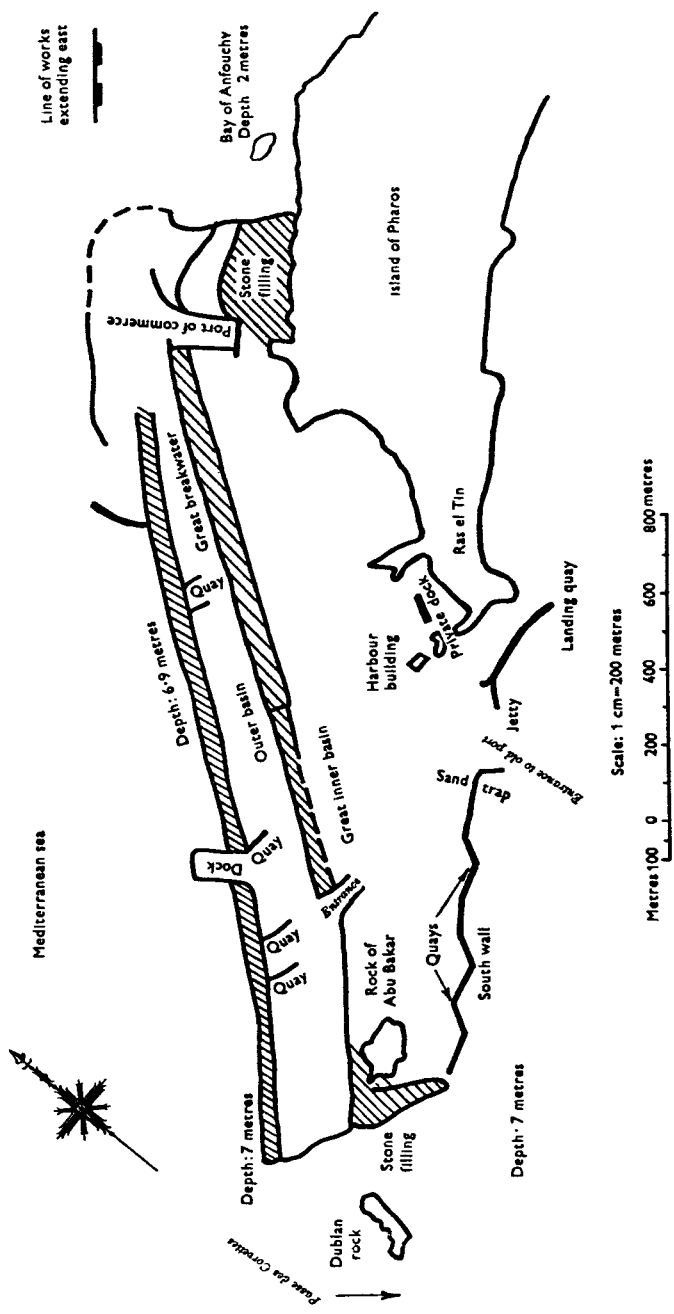


FIG. 2. PRE-HELLENIC PORT OF PHAROS

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of argillaceous sand in the shallow water off the end of Ras el Tin point. This quay was 525 feet long by 46 feet wide and 18–20 feet high, and was built of large rough-hewn blocks of limestone from the quarries at Mex on the mainland, carefully laid in courses and bonded with small aggregate and sand well tamped down. The top was paved with pentagonal flags 26 feet long by 23 feet wide, all of the same shape and forming a chequer-work. The walls were vertical, but the upper surfaces had a gradient of 3 per cent. No cement or mortar was used on this or on any of the quays or breakwaters.

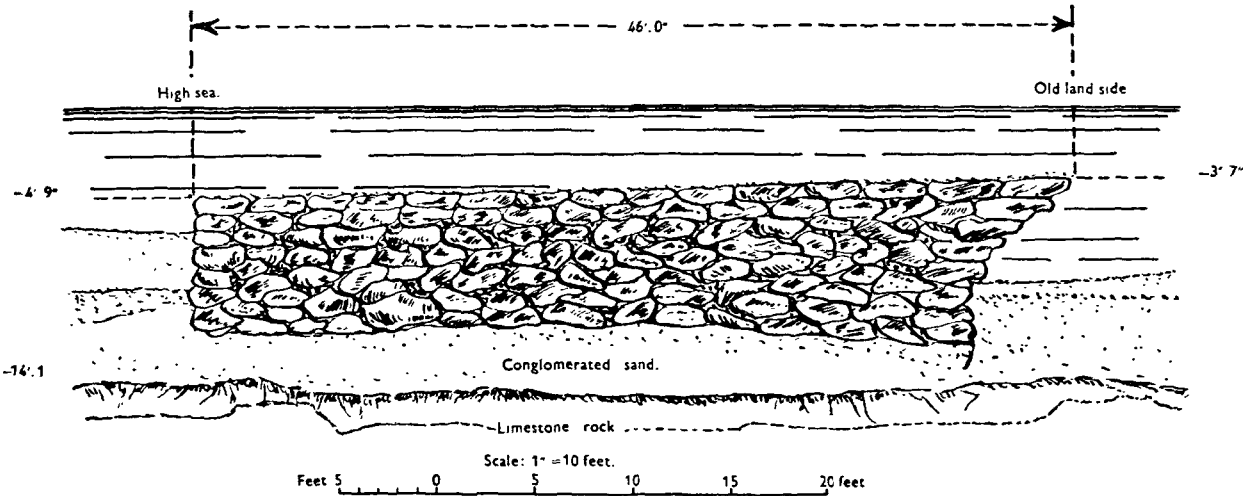


FIG. 3. CROSS-SECTION OF LANDING QUAY, PORT OF PHAROS

Jutting out from the end of this quay, and partly enclosing the harbour entrance, was a jetty about 426 feet long, consisting of two parallel walls just over 41 feet apart, closed at the end by a cross-wall. These walls were $7\frac{1}{2}$ feet wide at the top, and were built with a slight batter on each face. The space thus enclosed was filled with rubble and sand, and had no paving on the upper surface.

The main entrance, of which this quay and jetty formed the eastern protection, was 650 feet wide. The south wall of the harbour was 2300 feet long, in a general east to west direction, but its course was irregular because it was largely built up on a line of reefs which bordered the deep water of the inner basin. The upper parts of this wall were built of large, carefully-hewn blocks ranging from 8 feet to 16 feet in

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length, laid with great precision. Again no cement was used, but the joints were filled with small stones. At the main entrance end of the wall was a short protective mole or spur, 360 feet long by 65 feet wide, the object of which appears to have been to form a sand-trap to prevent the drift of sand caused by the south and west winds from blocking the entrance to the harbour.

The pavement of the southern wall is of interest because its pattern is typical of the pavements found in Minoan Crete and lends support to the view that the harbour was the work of Cretan engineers. It was composed of large slabs of stone, many 16 feet long, laid so that the joints radiated from a centre.

The southern wall ended at a point a short distance southwest of Abu Bakar. Thence ran two walls, each about 490 feet long, one in a

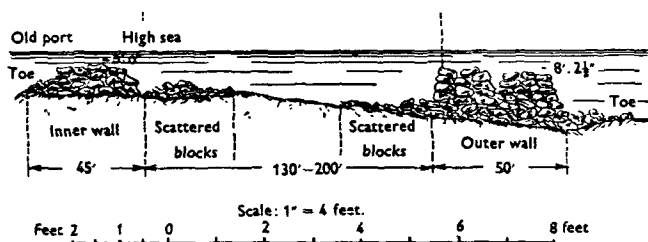


FIG. 4. TYPICAL SECTION OF GREAT BREAKWATER,
PORT OF PHAROS

north and the other in a northwest direction, enclosing between them a triangular area of about 28,000 square yards. This space was filled in by large blocks of limestone and formed an immensely powerful breakwater, much of which is still in existence and can be seen under water on a clear day.

The most marvellous works of this harbour were, I think, the two great breakwaters that guarded the inner basin and the outer basin. The first, which M. Jondet called the great breakwater, started from the northern end of the triangular mass just referred to and ran for 8500 feet in a straight line to the western end of Anfouchy bay. For its first 2000 feet it was built in the same way as the southern wall, except that the part bordering the Abu Bakar rock seems to have been filled in with dumped stone to form a solid mass. Then followed a length of 6500 feet which needed to be very strongly made. Two walls, founded on firm argillaceous sand overlying the submerged ridge already mentioned, were built 130-200 feet apart (FIG. 4). Each ranged in width at its

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upper surface from 26 feet to 40 feet, and had a batter of 1 in 30, and each was protected by a substantial toe. Their height, judged from the remains that have been found under water, appears to have ranged from 20 to 30 feet. The depth of water in the basin is unknown, but it may be estimated at 25-40 feet, with considerably deeper patches in the pool of Ras el Tin. The walls were built of enormous blocks of stone roughly hewn and coarsely laid. All of the space between the walls was filled with large blocks, forming a surface between 180 feet and 250 feet wide. The great width would enable defending parties to move rapidly to any part of the harbour during piratical attacks, whilst in normal times it was useful for drying and repairing sails and fishing-nets, weaving ropes, and so forth.

Running parallel to this breakwater, and about 650 feet distant from it, was another of similar construction enclosing the outer basin, the entrance to which was by a passage through the inner breakwater a little to the northeast of Abu Bakar, between its single-wall and double-wall portion. Protection was afforded by two moles running in the same direction as the landing-quay and protective mole guarding the main entrance.

The whole of the inner breakwater formed an immense quay. Besides this, several jetties about 60 metres (197 feet) long ran out from the outer breakwater, and nearly the whole of the south wall of the inner basin formed a broad quay, giving a total length of quay of about 10,000 feet. There was also a kind of dock built out seawards from the outer breakwater, the purpose of which is not clear. It may have been another entrance to the harbour.

The remains at the eastern end of the harbour bordering on Anfouchy bay are not so easy to interpret. About 650 feet from its end the great breakwater of the inner harbour was pierced by an opening 160 feet wide and 525 feet long, to form what M. Jondet calls the commercial harbour. This small port had two entrances, one from the outer basin, and one direct from the sea, carefully protected by two incurving breakwaters. Beyond the commercial harbour the great breakwater continued for a short distance to the shallow water at the commencement of Anfouchy bay, where a north and south cross-wall closed the harbour. A very large area between the breakwater, the wall, and the shore of the island was filled in with large stone blocks, as at the west of Abu Bakar.

At the extremity of the point of Ras el Tin, near the main entrance to the inner basin, is a small island around which are the remains of

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other works, including a short mole which enclosed a small private dock—perhaps for the use of craft owned by the harbour authorities. This surmise is made the more probable by the fact that slightly to the northwest are the submerged ruins of a large building, more than 92 feet long by 46 wide, with approach channels and steps, which appear to have been the headquarters of the port management, where pilots and the captains of ships would come to receive their orders.

To the east of the great harbour was a smaller one occupying the bay of Anfouchy. It also was protected by breakwaters and equipped with quays, but it afforded only a shallow depth of water and was used chiefly as a fishing-centre.

I have attempted to give a brief description of the ancient harbour of Pharos, as revealed by the researches of M. Gaston Jondet, carried out between 1910 and 1915 ; and when the science shown in its layout and construction is considered, we must, I think, agree with him that it was, indeed, the work of a realistic genius.

It may seem strange that when Alexander the Great founded Alexandria and built his harbour in 332 B.C. he should have taken no notice of these wonderful works. The reason was that they had disappeared under the sea, and all that marked the site of the future city was a little village at Rhacotis and a small colony of fishermen. There is no more record of its fall than of its rise. Homer may refer to it in the fourth book of the 'Odyssey', where he describes Pharos as an island in the troubled sea having within it a haven with fair moorings. If this is so, then its decline must be dated some time after 1000 B.C.

A few words as to the cause of its disappearance may be interesting, although 'disappearance' is really a misnomer, because, as M. Jondet has shown, a very large portion of the works still exists and on a calm day parts of them can be seen clearly below the surface of the sea. The ridge of high ground upon which the harbour was built is formed of limestone similar to that exposed in the quarries of Mex. Overlying the slopes of this ridge is a thin layer of clay, upon which is a thick layer of river silt in various states of consolidation. Covering this on the higher slopes is the stratum of hard argillaceous sand, and it was upon this that the walls and breakwaters were built. M. Jondet considers that, as the silt consolidated, its bearing value weakened and the stratum of sand which rested upon it glided down the slopes in sudden subsidences, the underlying clay acting as a sliding surface. The process was purely mechanical, although earth tremors may at times have started the movement. In this manner whole portions of the

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works glided below water-level, often without any damage to their structure.

Fifteen hundred years after the foundation of the harbour of Pharos, Alexander the Great, returning down the Canopic branch of the Nile from his visit to the temple of Zeus Ammon in the oasis of Siwah, halted at the village of Rhacotis. Ever since his destruction of Tyre he had determined to build a harbour that should be her rival. At Rhacotis he had found the place he wanted. He, himself, is said to have traced the plan of Alexandria and its harbour, which his famous engineer, Dinocrates, was ordered to carry out (FIG. 5). The main feature of the harbour was the great mole, 600 feet wide and 7 *stadia* (about 1 mile) in length, and hence called the *Heptastadion*, from the mainland to the island of Pharos, which divided the roadstead into two basins. It was built in a depth of water of 36 feet, and its construction entailed the excavation, transport, and deposition of about two million cubic yards of stone. The basin on the right of the mole formed the Great Harbour, and that on the left the *Eunostos* or Haven of Happy Return. Two openings through the mole connected them, thus conforming to the ancient rule that a harbour should have two entrances. The Great Harbour was bounded by the Lochias headland, the *Heptastadion*, and the eastern end of the island of Pharos. Seaward it was protected by a pier built out from Lochias and by a line of dangerous reefs, which made entrance to the harbour difficult. It was chiefly to remedy this that Ptolemy built the world-famous Pharos, or lighthouse, one of the seven wonders of the world, on the eastern point of the island. Alexander erred in putting his harbour in this place, since the depth of water was not so good as in the neighbouring haven, the reefs and Lochias pier did not provide sufficient protection against the winds, and the entrance was always difficult. Within the Great Harbour lies the small island of Antirrhodus, and between it, the mainland, and Lochias was formed a small *Portus Regius*, or Port Royal, for the king's ships. Between the *Portus Regius* and the *Heptastadion* the shore was lined with quays and storehouses. The public granaries were on the *Eunostos*, where also was a small inner harbour enclosed by piers. It was on this basin that the important canal connecting the harbours with lake Mareotis and the Nile, by its Canopic branch, opened. Alexandria partially fulfilled its founder's purpose of crippling the trade of Tyre; but this was due to the policy of Ptolemy Philadelphus (285-247 B.C.) who made a harbour at Berenice on the Red Sea, connected it with Coptos, on the Nile, by a road provided with water-places at proper stages, and reopened the

PLATE I



FOUNDATIONS OF THE MOLLS OF THE SIDONTIAN HARBOUR (see p. 220)

PLATE II



FOUNDATIONS OF BREAKWATER AT TYRE. (SEP. 22)

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canal between the Nile and the Red Sea at Suez. Thus he captured for Alexandria the important trade of the Indian Ocean and the Red Sea, which had hitherto passed by Eloth and Eziongebir to the coasts of Palestine, whence it was carried in Tyrian ships over the whole of the then known world. Alexandria's gain was Tyre's loss.

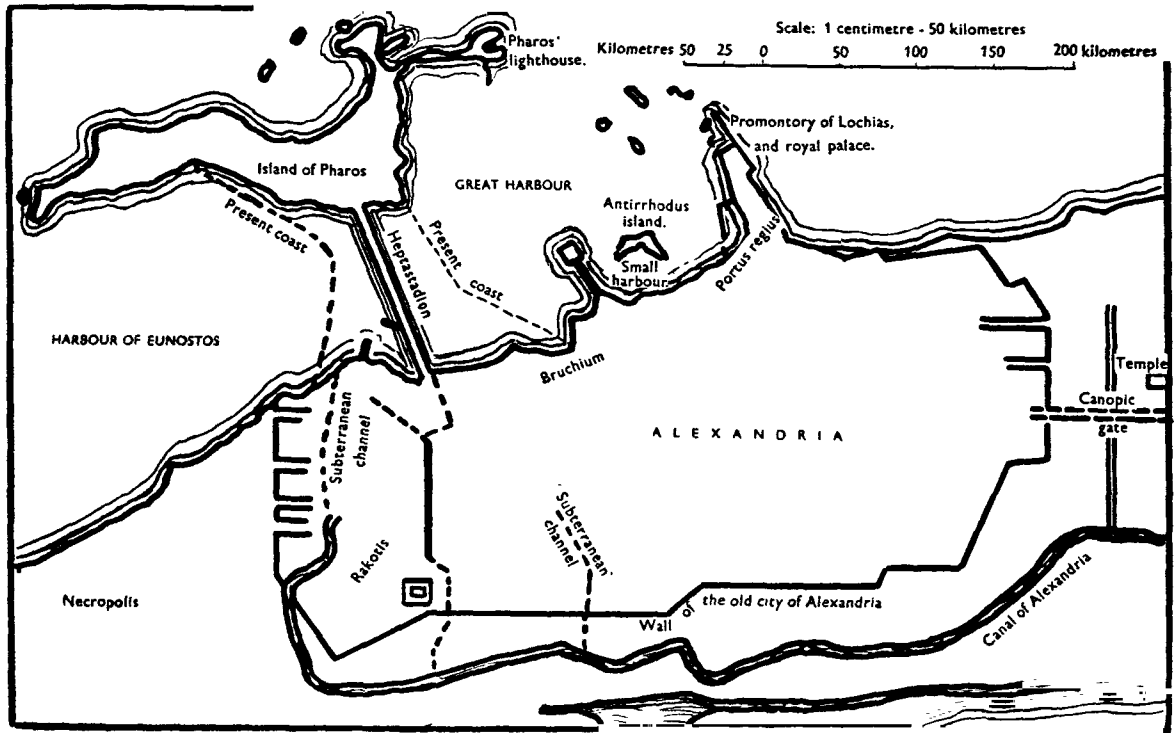


FIG. 5. PLAN OF ALEXANDRIA AND ALEXANDER'S HARBOUR, 332 B.C.

A period of more than 2000 years passes (FIG. 1). In the meantime the sand, which the engineers of ancient Pharos had been so careful to fend from the entrance to their harbour, had passed along the roadstead and had been caught up by the *Heptastadion*. Gradually it broadened until it formed that belt between the waters upon which a large portion of the modern city of Alexandria is built. The engineers of 1870 discarded Alexander's Great Harbour, which had been for many years too difficult and shallow for shipping, and the entrance to which

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was still dangerous and difficult to make. They returned to the western side of Pharos, and their great breakwater, like the south mole of the ancient harbour, was based on Ras el Tin. The modern harbour occupies what was the roadstead of its predecessor of 4000 years ago.

TYRE

Tyre was another famous pre-hellenic harbour (FIG. 6), but it is only a few years ago that a true plan of its works was published by Père A. Poidebard. As a result of three years' research, from 1934 to 1936, in which he made brilliant use of aerial observation and photography, coupled with submarine observation and photography, Poidebard was able to demonstrate the incorrectness of all previous plans, and the unreliability of any plan made of ancient works unchecked by careful research and observation on the spot.

History has given the Phœnicians a reputation as builders and engineers. A delightful story is told by Herodotus in his description of the cutting of the Canal of Athos, which illustrates their skill as engineers. 'When the trench grew deep', he writes, 'the workmen at the bottom continued to dig, while others handed the earth, as it was dug out, to labourers placed higher up upon ladders, and these taking it, passed it on further, till it came at last to those at the top, who carried it off and emptied it away. All other nations, therefore, except the Phœnicians, had double labour; for the sides of the trench fell in continually, as could not but happen, since they made the width no greater at the top than it was required to be at the bottom. But the Phœnicians showed in this the skill which they are wont to exhibit in all their undertakings. For in the portion of the work which was allotted to them they began by making the trench at the top twice as wide as the prescribed measure, and then as they dug downwards approached the sides nearer and nearer together, so that when they reached the bottom their part of the work was of the same width as the rest'. As builders they are, as everyone knows, renowned for the work they did for Solomon in building the temple of Jerusalem, whose 'great stones', 'wrought stones', and massive brass pillars 18 cubits high, modelled on those in the temple of Melkart, at Tyre, so impressed the Jews.

Tyre had two harbours (FIG. 6), the Sidonian on the north of the island and the Egyptian on the south, and like Pharos, a spacious roadstead to protect ships from the stress of the open sea when making the entrances. The Sidonian was what the ancients called a closed (*kleistos*) harbour; that is to say, it was within the circumvallation of the city

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and its entrance could be blocked by suspending a chain from one side to the other. The Egyptian was an open (*aneimenos*) harbour, outside the fortifications but adjoining them.

Tyre was a very old city, dating back, according to Herodotus, to 2750 B.C. This is probably incorrect, but at all events by 1400 B.C. its renown was widespread, and by 1100 B.C. its seamen had passed

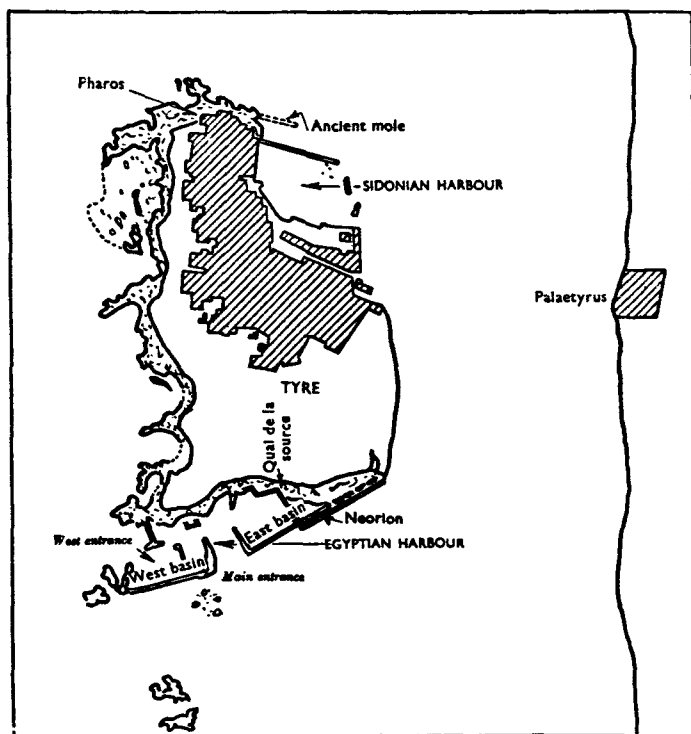


FIG. 6. TYRE, SHOWING CORRECT POSITION OF EGYPTIAN HARBOUR

Gibraltar and had dared the Atlantic. It was probably about this time that the Sidonian harbour was built. Hiram, king of Tyre (970-936 B.C.) friend and ally of Solomon, was a great builder and engineer. When he came to the throne Tyre was separated into three islands by arms of the sea full of reefs. Hiram filled these channels and on part of the land so reclaimed built the Egyptian harbour, not as Maspero and others have asserted, on the southeast of the island, but, as Père Poidebard's discoveries have shown, along its south coast

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(FIG. 6). A massive mole, 2500 feet long, runs from the southeast corner to a large exposed rock lying off the southwest corner. Two similar moles, one running northwards from the rock at the end of the south mole, and the other running southwards from the shore of the island, enclosed the harbour on the west. The ends of these walls overlapped so as to form a protected entrance from the open sea to the western basin.

Two marked advances had occurred in constructional methods since the days when the harbour of Pharos was built, namely, the use of concrete in making sea-walls, and the use of iron dowels run in with lead. Both of these methods were used at Tyre.

The moles were very solid structures (PLATE I). They had foundations of large, hewn, rectangular blocks, all laid as headers. The middle was composed of hard concrete divided at intervals into compartments by transverse bonding. The side bordering the sea was faced with squared slabs, 10 feet long by $4\frac{1}{2}$ feet thick, laid as stretchers. The south mole varied in width from 24 feet to 26 feet, whilst the two western moles, which had to face the full force of the sea, were $7\frac{1}{2}$ feet wider.

In the middle of the south mole was the main entrance to the harbour, and from each side of it two large wharfs, built of concrete and faced with stone, were built across the interior for about two-thirds of its width. The narrow passage thus formed was commanded by a fortified post on the island. This passage was the boundary between the western and eastern basins.

A concrete wharf, the *Quai de la Source* on Père Poidebard's plan, cut the eastern basin into two, the farther and smaller one of which appears to have been paved throughout with flagstones and to have been used as a *neorion*, or shipbuilding and repairing yard, equipped with slips and storehouses. Père Poidebard thinks that it may have communicated with its neighbouring basin by means of an inclined plane, but M. Bertou thought it had direct access to the sea. Possibly both methods existed. At the northern corner of the outer eastern basin, where the *Quai de la Source* abuts the island, was a small basin which accommodated a drinking-water tank for replenishing ships—an important item, for water was precious in Tyre, nearly the whole supply of the island having to be brought across by boat from springs on the mainland.

The Sidonian harbour made use of a small bay at the northeast side of the island and was partly surrounded by the city. Two jetties,

ANCIENT HARBOURS

one jutting out from the ancient tower near the modern lighthouse and the other coming from the opposite side in a northerly direction to meet it, protected its entrance. Père Poidebard was able to trace the northern jetty, and thus to prove that it lay some distance beyond the existing jetty of Sur and that the ancient harbour was larger than the modern. The construction of the jetties was similar to that of the moles in the Egyptian harbour.

Old authorities record that the two harbours were connected by a canal, but it is not shown on Père Poidebard's plan, or on Berthou's, made in 1846. It is, however, possible that there was communication through the arm of the sea said to have been reclaimed by Hiram. It was a common custom in ancient harbours to have two separate but interconnected basins, and Sidon, which also belonged to the Phœnicians, was laid out on this plan, which had obvious advantages. Vessels could enter one of the basins when a contrary wind prevented them from entering the other; if one basin was made unsafe by a storm, ships could move through the canal and take refuge in its neighbour; whilst if an enemy attacked he would have to split up his fleet or risk being surprised by the defenders who, having escaped through the other entrance, might attack him in the rear.

In addition to its harbours, Tyre took care to protect its roadsteads. North and south of the island ridges of rock, partly submerged and partly exposed, stretched parallel to the coast and formed a natural barrier against the waves. That they were not, however, considered sufficiently effective has been made clear by Père Poidebard's discovery of traces of two separate lengths of wall based on the southern line of reefs, one about 1000 feet and the other 1650 feet in length. These walls were of massive structure, 100 feet wide, and were faced with rocks, some of which were 10 feet square by $2\frac{1}{2}$ feet thick and weighed about 15 tons (PLATE II). Probably, although sufficient evidence is not yet available, there was a similar reinforcement of the north reef. Traces seem still to have been in existence when Maundrell visited Tyre in 1697, for he reports that the harbours were 'in part defended from the ocean, each by a long ridge resembling a mole stretching directly out on both sides, from the head of the island; but these ridges, whether they were walls or rocks, whether the work of art or of nature, I was too distant to discern'. That they were in part works of art is proved by the fact that the stone used is different from the rocks upon which it is laid, and that it must have come from quarries on the mainland where a similar stone is found. One cannot help wishing that more information

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was available as to how these immense masses of stone were conveyed to the spot and laid with such accuracy. M. Henri Watier, whom Poidebard consulted, considered the construction of such works perfectly practicable in antiquity. 'Several divers could', he says, 'easily push stones of nine tons weight into place as they were being let down by ropes'. The divers of Tyre, who were accustomed to collect the shellfish *murex* for the famous purple dye, would be ideal for such work. It is known that they could remain below water for one minute and a half.

Tyre enjoyed many centuries of fame as the finest and richest city in the world. All will recall the three vivid chapters in which the prophet Ezekiel describes the city and foretells its fall—'thy riches, and thy wares, thy merchandise, thy mariners and thy pilots, thy calkers, and the exchangers of thy merchandise, and all thy men of war, with all thy company which is in the midst of thee, shall fall into the heart of the seas in the day of thy ruin'. Even in the bitterness of his scorn he cannot refrain from a note of admiration; 'by thy wisdom and by thine understanding thou hast gotten these things'.

Five hundred and eighty years after the death of Hiram came Alexander the Great. Tyre, unconquered still, was too great a danger to leave behind him while he was away subduing the East. Alexander's fleet was too weak to fight her at sea. Nothing daunted, he attacked from the land, and for this purpose he built a colossal mole 100 feet wide and $\frac{1}{2}$ mile long in three fathoms of water, so that Tyre ceased to be an island and became a peninsula. He demolished the old city of Palætyrus for stone and robbed the forests of Lebanon for timber to accomplish his purpose. In nine months he completed his task and captured the city. The laws of nature asserted themselves; coastal drift completed what Alexander began, and now Sur, the ancient Tyre, is connected to Syria by a broad neck of land.

The following interesting example will illustrate the efficiency of the ancient harbour engineer. Some years ago a friend of mine went out to advise on the construction of a harbour in the Black Sea. After careful study, he recommended a plan for a rubble stone breakwater protecting a deep-water pier. On his return journey his ship called at Samsoun, the ancient colony of Amisus. As he had never been at Samsoun before, he went ashore, and was interested to find the ruins of a rubble breakwater sheltering a massive quay-wall, made of great blocks of masonry, which might almost have been built to the plans he had just drawn up. The ruins dated back to the days of Darius, say about

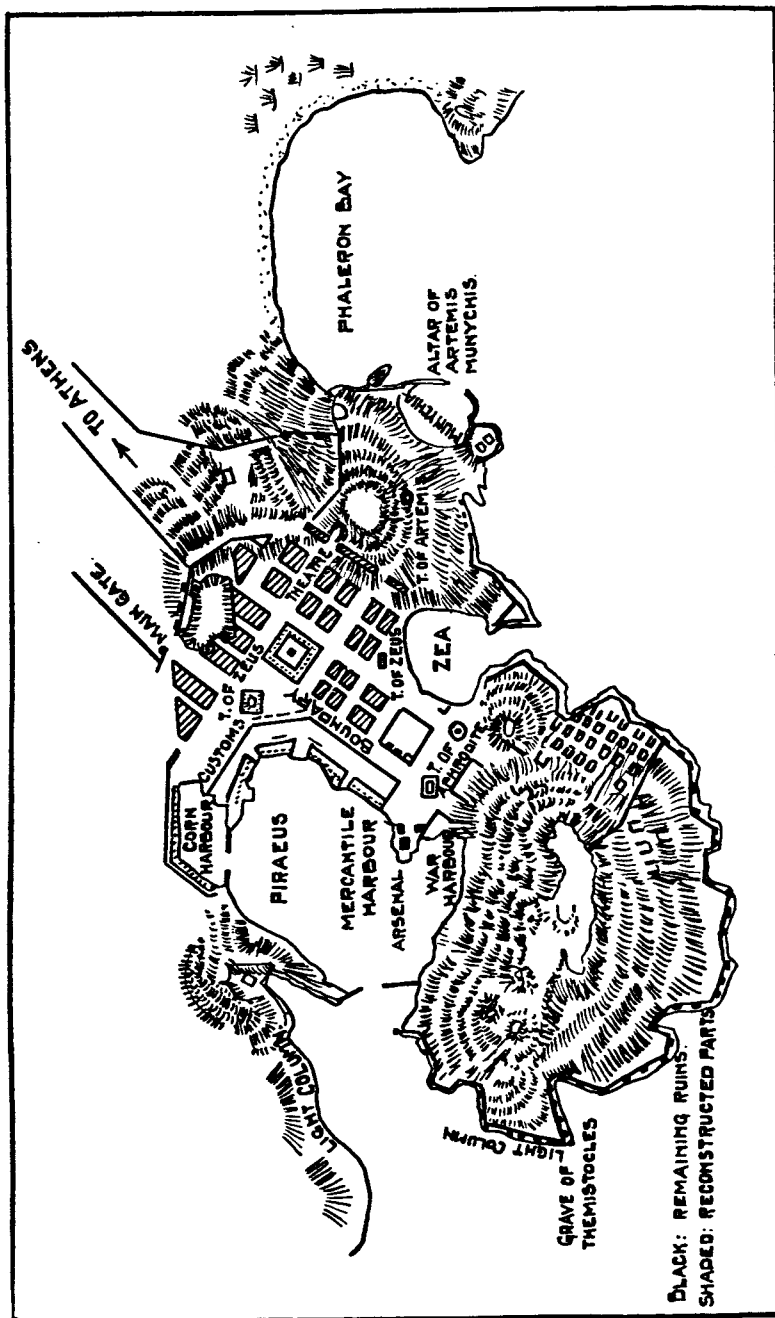


FIG. 7. PLAN OF PIRAEUS, ZEA, AND MUNYCHIA

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500 B.C. and I am very tempted to see in them the 'wisdom and understanding' of a Tyrian engineer, for it is known that the Phœnician interests extended thus far. Perhaps there is a powerful *genius loci* in the Black Sea; be that as it may, it is interesting that a Phœnician engineer (if my surmise is right) and a British engineer, separated in time by $2\frac{1}{2}$ millennia, should have solved a problem in almost exactly the same way.

GRECIAN HARBOURS

When we come to Grecian times a rather different state of things is found. The shores of Greece and those of most of her colonies abounded in deep bays and long arms of the sea stretching inland, forming excellent natural harbours that required little in the way of artificial works to make them safe refuges. Moreover, Greece was divided into many small states, each of which, except Doris, Arcadia, and a few others with no seaboard, had its own port. Great harbours of cyclopic stonework like Pharos and Tyre were, therefore, unnecessary. Generally all that their natural harbours needed, apart from quays and wharfs, were short moles to narrow the entrance.

In the early days Athens used the broad open bay of Phalerum, where ships were beached in sight of the city. That arrangement had several disadvantages. In a surprise attack the enemy might land and paralyse the defenders before they could get down from the city and launch their ships; a more serious and permanent objection was that vessels had to lie out in the open exposed to the elements, an important fact when it is remembered that no voyages were undertaken between November and March. When the Persian danger arose, Themistocles, in 493 B.C., persuaded the Athenians to transfer their shipping to the fine natural harbour of Piræus and its two small neighbouring land-locked bays of Zea and Munychia (FIG. 7). The works initiated by Themistocles and completed by Pericles gave Athens one of the safest and most convenient harbours in the ancient world. All three harbours were enclosed in one circuit of fortifications and connected to the city by the two famous long walls. The natural entrances to Piræus and Munychia were reduced in width to 55 yards and 40 yards respectively by the construction of solid breakwaters. Zea needed no narrowing. Apparently those breakwaters were constructed by heavy rubble thrown into the water and allowed to assume a natural slope. When the mound thus formed reached water-level a superstructure of huge blocks, some of them 10 feet square, fastened together with iron cramps, run

ANCIENT HARBOURS

in with molten lead, was built. This was the usual type of Grecian pier. Piræus, the main harbour, was divided into three chief basins, the mercantile harbour, in the centre, which occupied most of the area, the small corn harbour on the north, and the war harbour in the south. In the centre was the *agora*, or market, of Hoppodamus ; on the western margin of the War Harbour (the *Kantharos*) extended the emporium or *deigma*, flanked by a series of porticos, the centre of commercial activities ; near the entrance to the corn harbour was another large *agora*. Around the three harbours shipsteads were built, in which

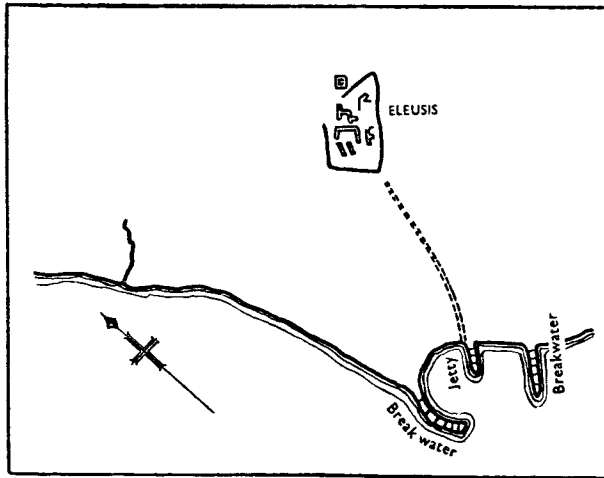


FIG. 8. ELEUSIS HARBOUR

vessels could lie high and dry. They formed an essential part of the dockyard, especially for warships, which put to sea only on active service. If the triremes were left lying in the water they soon became leaky and unseaworthy, and also were liable to be attacked by the *teredo*. Their wooden fittings were stored alongside the vessels in the shipsteads ; hanging tackle, sails, and ropes were kept in the large arsenal at the entrance to the War Harbour. Traces of such buildings in Zea and Munychia are still in existence ; those around Zea were roofed by low gables supported on stone columns, each gable sheltering two triremes.

Piræus, Zea, and Munychia were typical examples of the Greek natural harbours. At some places, however, artificial harbours had to be constructed, of which that at Eleusis (FIG. 8) may be regarded as typical, as the others were planned on a similar general principle. Two

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breakwaters were built out from the shore, curving inwards to form a narrow entrance between their ends, the space enclosed being an obvious imitation of a natural bay. Within the harbour was a jetty. This jetty and the breakwater were constructed in the same way, with a foundation of dumped stone and a superstructure of large blocks held together by iron dowels. In all cases the material used was stone, probably because the art of pile-driving was not yet sufficiently developed to make the use of piles safe in harbour engineering, although piling had already been used in house-building for many centuries, and probably, also, because piles were liable to attack by *teredo*.

ROMAN HARBOURS

'Italy', wrote Mr H. Stuart Jones, 'is not furnished by nature with many good harbours. The estuaries of her greater rivers—the Po and the Tiber—are subject to rapid accumulation of alluvial deposit, and some of her natural roadsteads, such as Antium, are rendered unfit for remunerative harbour-works by reason of their shifting sands. Few are the harbours such as Brundisium, where a safe anchorage is provided by natural spits and promontories. The Romans were therefore obliged to face technical problems of no small difficulty when their growing commerce demanded effectual shelter in the ports of Italy'. The Romans were essentially practical people, and in dealing with those technical problems they introduced many new methods, among which the most outstanding were the use of the arch, the cofferdam, hydraulic cement (*pozzuolana*) and the driving of piles in deep water. The discovery of *pozzuolana* in the third century B.C. brought about a radical change in building and civil engineering structures. 'Mixed with lime and rubble' wrote Vitruvius, 'it not only furnishes strength to other buildings, but also when piers are built in the sea, they set under water and can be dissolved neither by the waves nor by the power of the water'. The Egyptians, as I have shown, used the cyclopic dry-stone structure; the Greeks used large ashlar masonry held together by iron dowels and lead; the Romans used their famous, almost everlasting concrete made of *pozzuolana*, lime, and stone; and it was *pozzuolana* that rendered possible the erection of those gigantic vaulted structures found all over the Empire. Piles were used in bridgework and foundations; but the great importance of pile-driving, so far as we are concerned at the moment, was that it enabled the engineer to make cofferdams for pier-building.

Vitruvius, in his treatise on architecture and civil engineering,

ANCIENT HARBOURS

De Architectura, written at the beginning of the first century A.D., has at the end of the fifth book a short chapter on harbour engineering. His object was to deal with the methods by which ships could be protected against storms and tempests. After a reference to the usefulness of natural harbours, he explains the technique of building breakwaters by means of cofferdams (*arcae*). In the last section of the chapter he states that shipyards should have a northern aspect whenever possible, because southern aspects, owing to their warmth, generate dry rot, *tinea*, *teredo*, and other kinds of noxious creatures. In any case, he says, wood should be used as little as possible on account of its inflammable nature. His remarks on the construction of breakwaters are of considerable interest. Four different methods are described. In the first case, where a masonry dam had to be made in the sea, he advised a cofferdam made of oak piles bound firmly together with chains. When this was finished the bottom was to be levelled and cleared, and a platform of beams laid upon it. The whole space above this was to be filled with stones embedded in a mortar composed of 2 parts of hydraulic cement to 1 part of lime. Next he discusses what should be done in places where hydraulic cement is unobtainable. In this case a double cofferdam should be built and the spaces between the walls of each cofferdam filled with clay in wicker baskets, tightly rammed down to make them watertight. The interior was then to be pumped dry by means of water-screws and water-wheels, and, if the bottom were hard ground, a concrete wall composed of stone, lime, and sand was to be built upon it, the lower portion being made wider than the upper. If, however (and this is his third method) the ground at the bottom was soft, the foundation had to be prepared by putting down a layer of piles of charred alder and olive-wood filled in with charcoal. On this the outsides of the walls were built of squared stone, with the longest possible joints, so that the middle stones might be well tied together by the bedding. The middle was filled with rubble or masonry work. In a very difficult passage, he describes a fourth method, to be employed when it was not possible to use cofferdams owing to the violence of the sea. A mound was built out as far as possible, at the end of which small walls, springing from just below the water, were built up to the level of the top, forming an empty space between themselves and the slopes of the mound. This space was filled with sand, and formed what he called a margin. On this margin a large pillar of masonry was built and was left two months to dry; after that period the walls were cut away, and when the sand was scoured by the action of the waves the

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pillar fell into the sea as a solid monolith. 'In this way' says Vitruvius, 'as often as is necessary, the pier is carried further into the water'. It must, however, have been a very slow process.

The Roman ideal plan of a harbour is clearly expressed by Virgil in the first book of the 'Æneid':

*'Est in secessu longo locus : insula portum
Efficit objectu laterum ; quibus omnis ab alto
Frangitur. . . .'**

This, translated into an artificial harbour, presents us with the two incurving breakwaters of the Greeks, but with the Roman addition of a short protecting mole or island breakwater in front of the entrance, a type found in the important harbours of Antium, the Claudian harbour at Ostia, Centum Cellæ, etc. (FIG. 9).

There were, however, exceptions to this rule. At Puteoli, on the bay of Naples, one mole originally protected the harbour. It was of a peculiar type introduced by the Romans, consisting of an arcade of fourteen arches resting on fifteen piers, each about 50 feet square. The foundations of the piers were built of pozzuolana concrete, as laid down by Vitruvius, the upper portions being filled with fragments of tufa and brick. In addition to the mole there are also remains of a number of basins protected from the sea by a double row of piers ; those in the outer row were rectangular and probably carried arches, whilst the inner piers, opposite the open archways, are trapezoidal in section. Caligula built a floating bridge from the end of the main pier across the bay to Cumæ, a distance of 2-3 miles, which probably had also the military object of protecting the upper end of the bay of Naples against attack by sea.

The sand problem caused the Romans considerable trouble. Although some form of dredging is said to have been practised by the ancients in maintaining and deepening their irrigation channels, no record exists that it was ever developed sufficiently to enable them to use it to deal with silting in river-channels and harbours. The arcade form of breakwater was an attempt to use the tidal current to scour harbours, but usually failed in its purpose. The problem remained and silting drove the Romans from the harbour at Antium, and from the Tiber, and turned the magnificent harbour at Ostia into a failure. Speaking of the problem at the mouth of the Tiber, Sir John Rennie wrote, 'Upon referring to the history of the shore, at the mouth of the

* 'There is a deep bay in a roadstead ; an island forms it into a harbour by the shelter of its sides, which break every wave from the open sea'.

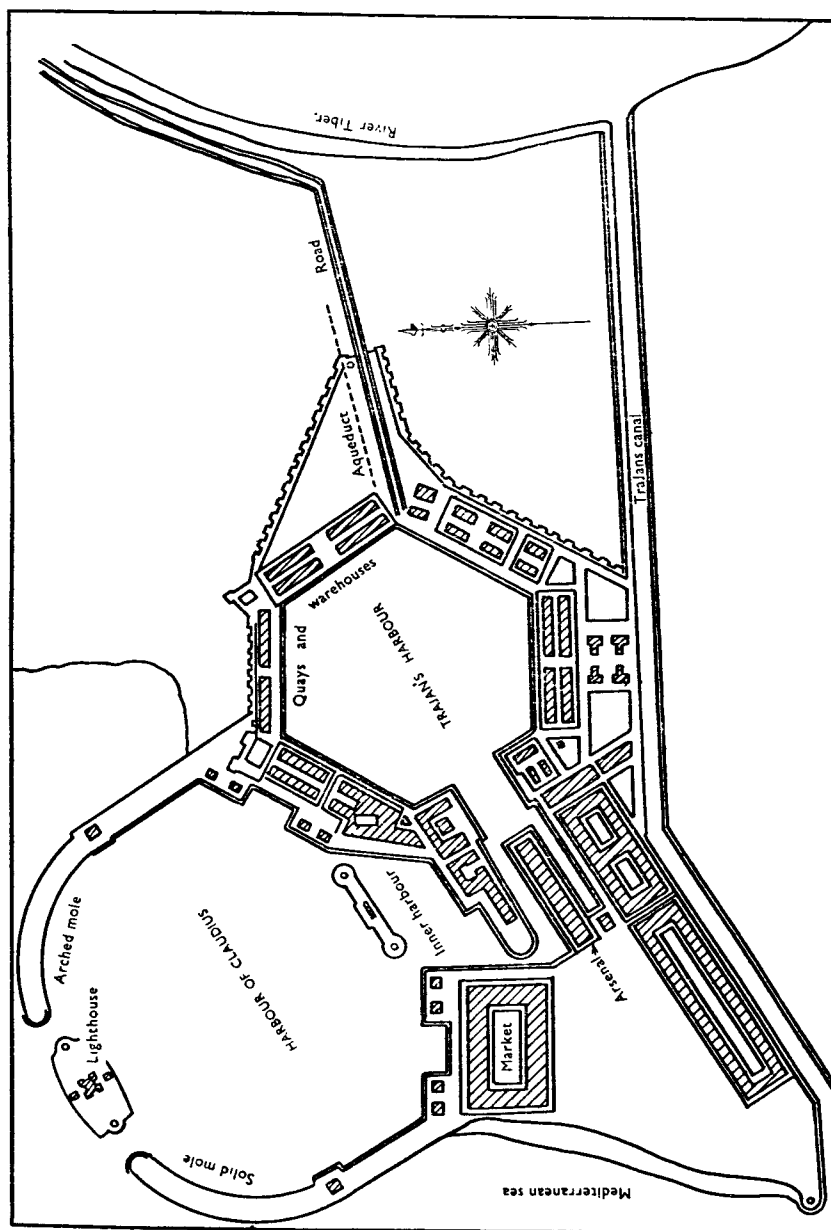


FIG. 9. THE CLAUDIAN AND TRAJAN HARBOURS OF OSTIA

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Tiber we find that from the foundation of Ostia by Ancus Martius in 634 B.C. to the end of the Commonwealth in 82 B.C. the line of shore had advanced about 1,100 yards in 552 years ; again from the Commonwealth to the end of the Empire in A.D. 364, a period of 446 years, it had advanced also about 1,100 yards, and from the Empire to the present time, being a period of about 1,400 years, it has advanced 2,550 yards, making a total distance of about 3 miles 600 yards in 2,480 years ; and a projecting delta is formed at the mouth of the Tiber '.

Many efforts were made to keep the Tiber open below Rome by revetting the banks and controlling the channel to induce scour, but all in vain. Gradually all shipping, except boats of the shallowest draught, was forced down to the lower part of the estuary, whence goods had to be transferred by barge to Rome. A great deal of the trade was transferred to Puteoli, which came to be regarded as the port of Rome and rose to the position of the premier commercial harbour of Italy ; but its distance of about 140 miles from the metropolis, along the Via Appia, formed a serious inconvenience in view of the slowness of transport in those days. Moreover a safe harbour nearby was needed to accommodate the fleet which had the duty of guarding the mouth of the Tiber. Cæsar realized the urgency of the problem and proposed to build a new port, but he was prevented from doing so by the objections of his engineers. In A.D. 43 Claudius overruled these objections and gave orders to proceed with the work (FIG. 9). A spot was chosen on the sea a short distance north of the river-mouth, and the place was called Ostia, after the town which had been the centre of the port works of the river harbour. This harbour had two basins. The outer was formed by two artificial moles, each 1900 feet long and 180 feet wide. Both moles ran out almost at right angles from the shore for nearly half their length, and then curved inwards, leaving a space of 1100 feet between their extremities. Immediately in the centre, and between the extremities, was an isolated mole, 780 feet long by 400 feet wide, leaving an entrance of 160 feet on either side. To form this mole the ship which had conveyed a huge obelisk from Alexandria to Rome for Caligula's Circus was filled with concrete and sunk. Great concrete masses were then piled on the top of it until the mole reached the surface. A lighthouse after the model of the famous Pharos of Alexandria was built on this island mole. The circular part of the main northern breakwater was constructed upon arches, in the hope that the current would prevent accumulations of sand. The southern breakwater was solid throughout, to prevent the entrance of drifting silt and

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sand from the mouth of the Tiber. The depth of water in the basin is unknown, but Sir John Rennie estimated that it would range from 15 feet to 20 feet at low water. The area was about 130 acres. At the upper end of this main basin was a smaller one of 1200 feet long and 520 feet wide, covering an area of about 7 acres. It was separated from the main basin by an island mole similar to that in the main

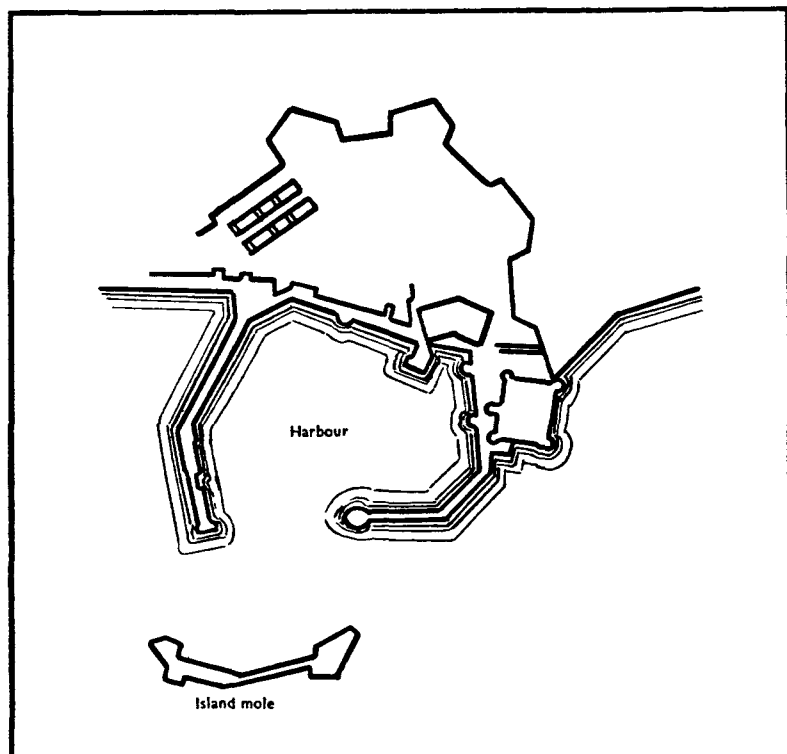


FIG. 10. CENTUM CELLAE HARBOUR

entrance. A very large portion of the harbour was dug from the mainland, and it is said that this involved the excavation of 80 million cubic feet of earth. In spite of the vast amount of money and care expended on this work the harbour was not a success. Tacitus reports that 200 ships were sunk in the harbour itself during a storm in A.D. 62. Trajan (A.D. 92-117) added an inner basin, hexagonal in shape, with an area of about 70 acres. Claudius had dug two canals, running parallel to each other, connecting the harbour with the sea and the Tiber. To

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remedy this, Trajan took up part of one of these canals in creating his new basin and filled up the other. He then dug a fresh canal, which has since become the mouth of the Tiber, the river having deserted its old course. The harbour was well provided with quays, transit-sheds, and store-houses, some of which were finished, regardless of expense, with marble tiling.

The Roman engineers were right when they advised against building this harbour. The forces of nature were against it from the beginning, and today the remains of the great port of Ostia lie buried in sand a mile from the shore. The tendency must have begun to become obvious even in the reign of Trajan, for he took measures to provide a new harbour for Rome a little higher up the coast. The result was the harbour which, under its modern name of Civita Vecchia, is now the principal port of Rome. Centum Cellae (FIG. 10), to give it the name by which it was then called, was planned and built on precisely the same principles as those employed at Ostia, except that in it the island mole overlapped the ends of the main breakwater, instead of lying between them. The harbour, as its name implies, was provided with one hundred covered *cellae*, or docks for warships.

The Roman Empire was followed by a period of more than a thousand years of quiescence, or even retrograde action, in harbour engineering. I know of no great harbours, such as those which I have described, that were built during the dark periods of the Middle Ages. We have to wait till the great engineering revival that began about the middle of the 18th century before we find such ambitious schemes again attempted.

It is, however, interesting to study the debt we owe to the ancients. The similarity of their treatment of problems to the methods of the modern engineer is, as I have tried to show, in many cases, very remarkable.

Sea-trade in Early Times

by JAMES HORNELL

THE few indications that have come down to us of ancient sea-traffic between the countries lying around the shores of the Red Sea, the Persian Gulf and the Indian Ocean are so fragmentary and obscure that it is extremely difficult to reconstruct any definite picture of their character and extent. In spite of this handicap study of the meagre evidence available compels the belief that movement by sea, although of a fluctuating character and confined for the most part to coastwise voyaging, was far more active and advanced in parts of this area in very early times than is generally realized. Had it been otherwise how could we interpret the signs graven on the rocks of the ravines of the Egyptian desert, and the transport by sea of great blocks of stone to Sumer in the time of Gudea of Lagash ?

The earliest evidence at present available comes from the Red Sea and the Persian Gulf, though it does not follow that either area is the cradle of sea-faring. It consists of :—

(A) innumerable prehistoric and predynastic petroglyphs of ships engraved upon the rocks of the eastern desert of Egypt, particularly those in the Wadi Hammamat region ;

(B) the discovery on Sumerian sites of diorite statues, stated specifically to have been brought by sea from foreign lands early in the third millennium B.C. ;

(C) the presence in the ruins of Ur, Kish, and Lagash of artifacts cut from the shell of the sacred Indian chank (*Xancus pyrum*) ;

(D) historical records of trading expeditions sent by sea from Egypt to Somaliland extending from the vth to the xiith Dynasties, and repeated in the xviiiith Dynasty.

The periods when long-distance voyaging was markedly active were intermittent ; they coincided with the reigns of princes of outstanding energy and martial success desirous of setting up imperishable memorials in stone of their great deeds, or of acquiring valuable metals, precious stones, incense for the Gods, and articles of foreign luxury. Alternating were times when the stress of unsettled political conditions

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restricted sea-faring to petty trading from port to port. These fluctuations in commercial relations continued in the Indian Ocean region until the time of the Ptolemies, when large-scale commerce by sea assumed a regular and semi-permanent character thanks to the enterprise of Greek rulers and Greek traders, and to the growth of demand from Europe for the varied commodities of India and the Far East.

THE EGYPTIAN PETROGLYPHS

The great profusion of prehistoric and predynastic petroglyphs found upon sandstone rocks in the eastern desert of Egypt, particularly (as at present known) among the hills and wadis on the route between the Nile at Quft and the coast at Kosseir,¹ furnishes conclusive evidence of the presence of a fairly numerous population during a long-distant and lengthy period. The remoteness of its age is shown by the patination of the figures, the crudity of the execution, and the simple character of the weapons and boat-designs depicted. No permanent inhabitants are to be found there today and no people have been settled in the area within recorded history; the only folk of a later age ever quartered there in considerable number were slave quarrymen and their guards in dynastic times, who certainly did not grave these figures and who required a highly organized commissariat to keep them supplied with food and water, otherwise awaiting in these now desolate ravines. When I visited some of these rock-sculpture sites on the way to the Wadi Hammamat in 1938, the only people met were a weary camel man and his son passing Nilewards.

At the time when the scenes depicted were graven, the climatic conditions were entirely different from those now prevailing. Instead of a land sun-baked and arid as at present, the eastern desert was blessed with a copious rainfall; vegetation in consequence was abundant, with bush and grassland sheltering antelopes and wild cattle, giraffes, wild asses, barbary sheep and ostriches, together with a host of animals which have now to be sought far to the south in the forests and plains around the headwaters of the Nile—even elephants were numerous.

Boats are among the commonest subjects depicted; they are extremely numerous. They fall into two main constructional categories with several intermediate modifications, proof that over a prolonged period peoples of differing cultures occupied wide areas of what is now the eastern desert of Upper Egypt. The earlier of the craft

¹ H. A. Winkler, *Rock-drawings of Southern Upper Egypt*, pt. 1. (Egypt Exploration Society, London, 1938).

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represented are closely related to those painted upon pottery of the predynastic Gerzean age—broad-beamed craft propelled by many paddlers, with the hull curved in crescent fashion. Unprovided with sails these are obviously fair-weather vessels, such as could only be used for travel on quiet inland waters. In such craft immigrants from the land of Punt, the legendary home of the Egyptians, may well have arrived, passing northward into Egypt along the Nile valley.

Other figures of boats of a different type, straight along the keel and with tall, sharply upturned ends (FIG. 1), exhibit a decided advance in the art of boat-building, although they appear to have been contemporary in time with the craft of crescentic hull-form. These belonged without doubt to a race of incomers who met and gradually mingled their blood with the people of the country, the owners of the curved type of river canoe, obviously constructed of papyrus bundles. The new type in its general form and the occasional presence of a figure-head on the summit of the upturned prow, is distinctly suggestive of close relationship with the vessels used upon the Euphrates and the Tigris from early days, and particularly with the river craft seen upon Assyrian sculptures from the ruins of the palace of Sargon II at Khorsabad (FIG. 3).² Winkler hazards the hypothesis that these boats brought a virile, energetic people by sea from Mesopotamia, and I would be inclined to agree with him were the voyage less lengthy and beset by fewer dangers. Suggestions have indeed been made by several writers that journeys along the same route were performed by Persian Gulf mariners in the time of Gudea of Lagash and other Babylonian rulers in the first half of the third millennium B.C. These I am unable to accept as possible at such an early period, knowing from experience something of the hardships and difficulties experienced by small craft during a voyage along these rugged and exposed shores.

A more feasible explanation is based upon the fact that during the prehistoric period under consideration, the fertile regions of Arabia, in common with those of Egypt, were considerably more extensive than at present. While the northern region and most of the interior of Arabia were in the occupation of Semites, the coast-people of the Persian Gulf, who seem to have been akin to the early inhabitants of Lower Mesopotamia and Elam, would tend to spread coastwise through Magan along the Ocean seaboard and thence find their way into the Yemen. For the high-prowed, canoe-shaped craft of the rock-gravings the crossing of the Red Sea at its southern end would present little danger or

² A. H. Layard, *Nineveh and its Remains*, II, 383.

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difficulty ; once across and settled, these immigrants into Africa appear to have resumed their coastwise expansion. How far this spread we shall not know until further search for rock-gravings in the Sudan affords the necessary data. At present our knowledge is confined mainly to the hinterland of Kosseir. This locality at the time in question must have been a veritable Land of Promise for the immigrants ; during the rainy season the Wadi Hammamat and the other wadis of the surrounding country were the beds of streams of considerable volume, irrigating and fertilizing the low lands around which are now a desert of sand and gravel.

The foreign boat carved on the Gebel el-Araq knife-handle (FIG. 2) is of the same general type as that used by these intruders from the Arabian coast (FIG. 1). It has a similar hull-form, but the mast and other equipment suggest an advance in design consonant with an origin considerably later in time. The context also implies a condition of strife between the incomers and those whom we cannot doubt were the principal stock from which the mass of the people of Egypt have been derived.

DIORITE STATUES OF EARLY BABYLONIA

Positive evidence of the existence of organized ship-trade in the Persian Gulf in the first half of the third millennium B.C. is afforded by the frequent use of a fine-grained diorite of oversea origin for statues and other monuments, erected by Sumerian and Semitic rulers of the city-states and petty kingdoms that flourished at that period in Lower Mesopotamia.

The coast people living at the head of the Gulf were noted as busy sea-traders then and for long after ; ' the cry of the Chaldaeans is in their ships ' says Isaiah (XLIII, 14). How true this was is apparent when we read in the inscriptions upon the monuments of Gudea of Lagash and of Naram-Sin of Agade that the stone whereof they were made was brought by sea from the mountains of Magan.

The earliest of these stone witnesses are those of Manishtusu (*c.* 2800), son of the great unifier, Sargon of Agade. All of these bear a standard inscription setting forth that the king had brought back the stone from an expedition ' in ships from the mountains beyond the Lower Sea ', the term used in Babylonia for the Persian Gulf—the Upper Sea being the Mediterranean. In the reign of his immediate successor, Naram-Sin (*c.* 2795-2739), another naval expedition was launched against rebellious vassals in the coast lands of the Gulf.

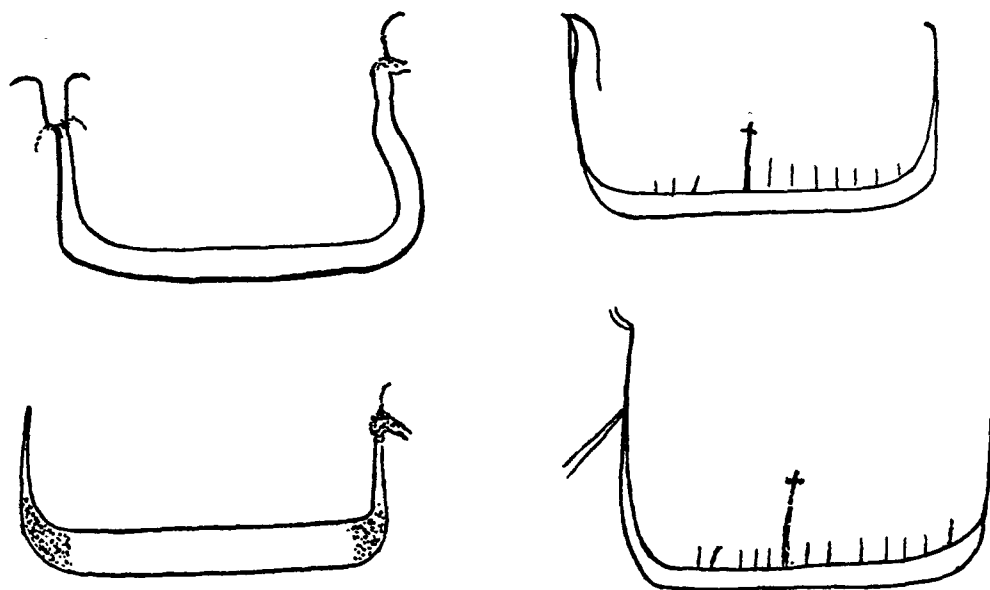


FIG. 1. FOUR PETROGLYPHS OF 'FOREIGN' BOATS, EASTERN DESERT, EGYPT (see p. 235)
after Winkler, but with the hammered outlines smoothed

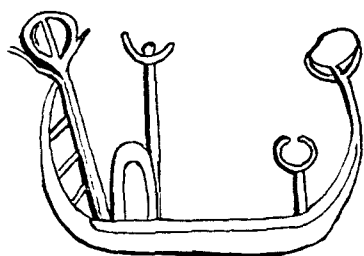


FIG. 2. THE FOREIGN SHIP CARVED
ON THE GEBEL EL-ARAQ KNIFE
HANDLE (see p. 236)
after Bénédict

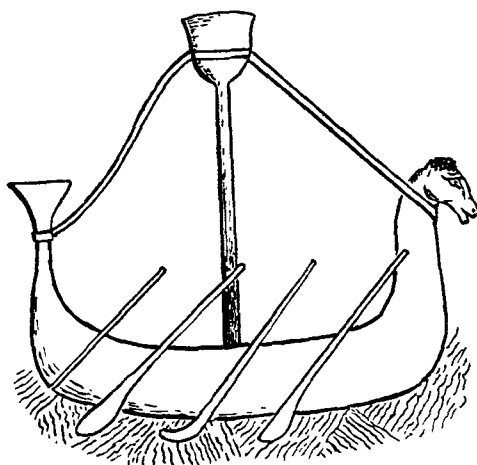


FIG. 3. ASSYRIAN VESSEL, FROM KHORSABAD
(see p. 235)
after Layard

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Of a block of diorite brought back he caused to be made a statue of himself ; in a fragmentary inscription we read that he had smitten Magan and captured its king. A marble vase looted from Magan is inscribed ' Naram-Sin, king of four regions, a vase, booty from Magan '.

Gudea, the *patesi* of Lagash (c. 2600) was still more avid of self-glorification. No less than twelve of his statues, all of diorite, have been recovered. Of these the inscription on the one known as statue C states that Gudea brought from Magan the stone from which it was sculptured ; on another, statue D, mention is made of the building of a ship for the goddess Bau and of voyages made to Magan and Melukhkha.

Identification of Magan, and of Melukhkha which is usually coupled with it, has long been an archaeological stumbling block. Many authorities believe Magan to be Sinai Peninsula ; even H. R. Hall³ considers that material for the early Sumerian statues was freighted by sea from Sinai or from the Wadi Hammamat area of Upper Egypt. S. H. Langdon,⁴ however, writing in the same volume dissents and considers that Magan was somewhere in the coastal lands which stretch from the modern El-Hasa, opposite Bahrein, eastwards to and inclusive of Oman. Only the geologist can decide this question authoritatively ; microscopic comparison of the crystalline structure of the diorite of the statues with that of diorite from all available sources in Oman, Upper Egypt and Sinai is necessary if the problem is to be lifted out of the haze of hypothetical uncertainty. In my opinion the localization of Magan in Oman or on the way thither appears much the more probable for various reasons ; of these one which is peculiarly cogent, if indeed it be not decisive, is the mention in the syllabaries of the special quality of the dates of Dilmun, Magan and Melukhkha. The island of Dilmun at the head of the Persian Gulf, traditional cradle of the Sumerian people, was noted for its date palms as is, indeed, the same region at the present day. In Oman too where several of the long lateral valleys have been highly cultivated from time immemorial, groves of date palms still yield fruit of superior quality. By this criterion alone both Sinai and the Eastern lands of Upper Egypt are excluded from identification with Magan. Both localities at this time were rugged and inhospitable lands totally unsuited to date-palm cultivation ; what few dates are produced there today are of execrable quality, dry and flavourless, as I am able to bear witness.

³ *Cambridge Ancient History*, vol. I, 583.

⁴ *ibid.*, vol. I, 416.

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Another argument put forward by those who would identify Magan with Sinai is the Sumerian description of Magan as the mountain of copper ; this again has little weight for copper is still found in the Jebel Akhdar, the mountain range dominating the coast of Oman. Taken in conjunction with the occurrence in the same hills of intrusive masses of diorite and the cultivation of date palms in the valleys, we have three weighty reasons for considering Oman and some part of the adjacent southern coast of the Persian Gulf as equivalent to the lands known to the Sumerians as Magan and Melukhkha, rather than the bleak, infertile and far distant regions of Sinai and the eastern desert of Upper Egypt.

A text from Lagash, of the time of Dungi, king of Ur (c. 2456-2398), speaks of the Magans as shipwrights, and as *Ma* is the Sumerian for 'ship', we see in these ancient folk of Magan a people similar to the Omanites of today—expert shipwrights, ocean carriers trading in their own baghlas and bûms to ports in India, Iraq, Arabia and East Africa, fishing along the coast in innumerable small craft and cultivating in their valleys the date, the vine, the mango, the apricot and the orange.

INDIAN SHELL ARTIFACTS

Shell artifacts from horizons of great age in the ruins of Ur, Kish and Lagash are made from the porcelain-like snow-white shell of the sacred Indian chank (*sankha*), known scientifically as *Xancus (Turbinella) pyrum* (L.). This large and handsome conch is found only in the coastal waters of India, and Ceylon ; its range is strictly limited, with a discontinuous distribution extending from Kathiawar southwards to Travancore ; thence turning north on the east coast it runs through the Gulf of Mannar to the Coromandel coast, disappearing just south of the Godaverī delta. It is unknown in the Persian Gulf.

The presence of articles made from the chank is positive proof of commercial intercourse with India. The shells might have been carried overland but this would involve a long, difficult and circuitous journey. The probability is far greater that they were carried coastwise, and direct from Kathiawar, in craft similar to those that conveyed a stream of foreign immigration into the western area of Upper Egypt when it was fertile and a hunter's paradise.

The Indian chank has always had religious significance in the eyes of Hindus ; Vishnu holds it in one hand ; Brahman priests pour libations from it to the glory of their gods ; it sounds the call to worship in their temples, and to the Hindu women of Bengal a lacquered

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chank bangle has the same significance in marriage as the wedding ring in Europe.

Ancient sites of chank artifact manufacture extend from Cape Comorin to Hyderabad in the Deccan and onwards to Kathiawar, where the shells are still fished in the neighbouring sea. Chanks used as lamps and feeding cups have the central column cut away and of this form are some of the objects found in ancient Sumerian sites. Hitherto these and the plaques bearing carved themes such as we see on many cylinder seals, have been passed over as objects fashioned from shells collected locally in the Persian Gulf. This was impossible, for Kathiawar was the nearest source of the raw material. Commerce with India was necessary and this, almost certainly, followed the sea route. Vessels of similar form have been found at Chanhudaro in the Indus Valley and these are assigned to the Harappa culture, coeval with old levels at Ur and Kish.

After the passing of the city-states of the third millennium there is little evidence of a continuation of commercial intercourse with India by the sea route until somewhere about the dawn of the first millennium B.C. Chank shell artifacts reappear at Susa during the Achaemenid Dynasty *c.* 500 B.C.; fine examples recovered by the French explorers of this site are now in the Louvre Museum.

THE EGYPTIAN RECORDS⁵

The early part of the third millennium B.C. witnessed a stirring of maritime activity in Egypt parallel to what was then happening in the coast lands around the head of the Persian Gulf. As early as the vth Dynasty we find Sahure (*c.* 2958–2946) sending ships to Punt, the modern Somaliland or rather that part of it stretching from Eritrea to Cape Guardafui. As in all subsequent expeditions to this land the chief products sought were frankincense and other aromatic gums essential to the proper service of the gods; ivory and gold too were desired, together with rhinoceros horns, panther skins and rare woods. This, so far as is at present known, is the first occasion when Punt products were obtained by the sea route. Previously the land route across Abyssinia and up the Nile was the usual channel of trade. The probability that voyaging to Punt by way of the Red Sea took place

⁵ The Egyptian chronology followed here is that of H. R. Hall. With regard to the Babylonian dates given above, a lower estimate, varying between 150 and 300 years, is adopted by some authorities.

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in earlier days is by no means precluded, for we know that large ships were in use on the Nile during the 1st and 11th Dynasties and Snefru (*c.* 3100), the last Pharaoh of the 11th Dynasty, caused to be pictured on the walls of his tomb-temple the pageant of a victorious Red Sea fleet.

Under Sahure's successors it seems certain that trade with God's Land, as the Egyptians termed Punt, continued active; we find Pepi II (*c.* 2738–2644) building ships for the royal commerce with that land.

The earlier expeditions to Punt, those by land, were organized by the Lords of Elephantine, 'Keepers of the Southern Door of the Kingdom'; when the sea-route was opened, the preparation of the ships required for the successive trading expeditions was also delegated to them. On one occasion we hear of the massacre of the officer and shipwrights busy with the building of new craft on the shore of the Red Sea; the Lord of Elephantine ordered to recover the officer's body accomplished the task and inflicted punishment on the Bedouin murderers. How active was the Punt traffic at this period may be judged from the boast of an Elephantine official that he had been to Punt eleven times—how often by the sea route is not stated.

Subsequent to the 6th Dynasty no record is known of further sea voyages to Punt until the reign of Sankhkere Mentuhotep of the 17th Dynasty (*c.* 2242–2212). Under his orders Henu, his Chief Treasurer, was ordered to open up the quarries in the Wadi Hammamat and to fit up a ship for a voyage to Punt. His expedition was organized with consummate skill. In spite of the waterless nature of the desert traversed between Koptos and the sea, each of the 3000 quarrymen, soldiers, sailors and followers received daily a ration of two jars of water and twenty small loaves. Leaving the bulk of his men at the quarries, Henu pushed on to the coast and there built and despatched the Punt trader as instructed.

Commercial relations with Punt thus re-opened, were continued at frequent intervals during the succeeding 18th Dynasty. Under Amenemhat II (*c.* 2150–2115) we find two of his commanders setting up inscriptions at the Wadi Gasûs, a small port north of Kosseir, commemorating their successful return from a voyage to Punt. Some years later one of the Senusrets, probably Senusret III, recognizing the disability under which the Punt trade laboured by reason of being based upon a wretched port at the end of a difficult desert route, resolved upon the digging of a canal from the eastern branch of the Nile, through the Wadi Tumilat and the Bitter Lakes to reach the sea at the north end

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of the Gulf of Suez. When completed ships thereafter were built wherever facilities were greatest. If laden at Thebes, they sailed down the Nile, through the new canal and out to sea near Suez.

Trade with Punt appears to have been the exclusive monopoly of the Pharaoh, but there is evidence in the 'Story of the Shipwrecked Sailor', a fabulous tale vastly popular with the masses and dating from this Middle Kingdom, that private enterprise from about this period began to take some part in the minor trade of the Red Sea. On the western coast there were certainly trading and victualling stations for the Royal Punt fleet, but the coast is bleak and arid, as is the greater part of the east coast; apart from Punt the little private trade there was would tend to centre round the fertile southwestern corner of Arabia.

With the passing of the xiith Dynasty dark days dawned upon Egypt. Rebellion ruined the land, so sapping its strength through disunion that an invasion of Semites proved successful, with the result that the harsh rule of the Hyksos prevailed for several generations. The two centuries of unrest and foreign rule that lasted before a deliverer appeared caused total cessation of the flourishing sea-trade with Punt. Even when the land was purged of the rough, uncultured Hyksos, no attempt was made to resume commercial relations by the sea route until Hatshepsut, the first great female statesman and ruler known to history, was able to seize supreme power over Egypt. Emulous of the maritime enterprises of the kings of the xth and xith Dynasties, she proclaimed a message from Amon, directing that the sea-ways to Punt should be searched out and that incense terraces were to be established in a garden before his temple. Preparations were made upon a grand scale; the twelfth-dynasty canal from the Nile to Suez still existed, or perhaps it was cleared out, and once again a fleet of fine ships, five in number, passed down the Nile, out into the Gulf of Suez and away to Somaliland Punt. Their arrival there caused immense surprise; the Punt chief wondered whence the ships had come—so long ago was the last previous visit from Egypt that surely the way had been forgotten!

Friendly relations were soon established and cargoes of immense value taken aboard, probably of greater value than ever before laden in Egyptian vessels. Gold in great quantity, electrum, ivory, ebony, panther skins, 3300 small cattle, and huge piles of myrrh were among the products which eventually reached Thebes and were there offered to the god, in whose garden the Great Queen planted 31 living myrrh trees.

SEA-TRADE IN EARLY TIMES

Hatshepsut's husband (?) and successor, Thutmose III (c. 1479-1447), set a new value upon sea-power; his fleets dominated the Levant and in the Red Sea his power extended to Punt whence his ships brought back the usual rich and varied cargoes; these voyages further increased the area dominated by his political power.

After Thutmose III we hear of no important expeditions in the Red Sea until the time of Ramses III (1204-1172 B.C.) This vigorous ruler fostered foreign trade as never before; he maintained even more powerful fleets both in the Mediterranean and the Red Sea. Large scale sea-commerce as hitherto appears to have been reserved to the Pharaoh, and undertaken to provide incense and wealth for the temples of Amon, Re and Ptah. The twelfth dynasty canal to Suez was, however, silted up and in disuse, and so the Punt fleet had again to be based on a harbour at the Red Sea end of the caravan route from Koptos. These later Punt ships were vessels of considerable size, and handsome appearance, each hoisting a great square sail, maybe chequered in bright colours as depicted on the walls of one of the little store-rooms not far within the entrance to the Pharaoh's tomb in the Valley of the Kings. Larger still was the sacred barge of Amon at Thebes, 224 feet long, built by command of Ramses, and constructed entirely of Lebanon cedar.

After the death of Ramses III, the Empire began rapidly to decline; it became a prey in turn to Libyans, Ethiopians (Nubians), and Assyrians, of whom none showed interest in developing trade in the Red Sea. Spasmodic bursts of vigour were not wholly wanting to relieve the gloom of national decadence. One such interlude coincided with the reign of Sheshonk I (945-924 B.C.), an energetic Pharaoh, the contemporary of Solomon—probably father of the chief wife of that polygamous Jewish monarch whose political wisdom accepted a position of easy vassalage for the material advantages to be gained. One of these was the privilege to trade to the Southern Sea from the Jewish haven of Ezion Geber at the head of the Gulf of Suez.

Solomon's cherished temple enterprise required large supplies of ornamental timber, precious stones, gold and the fragrant gums needed for the fitting service of Jehovah. Thus was born the first ambitious attempt to open up direct sea-trade with that mysterious emporium known in biblical story as Ophir. To accomplish this project Solomon found it necessary to enter into a working partnership with the greatest sea-king of that time, Hiram of Tyre, who aided him with timber from Lebanon, with shipwrights to build the ships and with pilots and seamen

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to take them eastward to Ophir. This port, in my opinion, cannot well have been other than one of the great marts on the west coast of India, where the produce of the gold mines of Hyderabad (Deccan), of the spice lands and timber forests of Malabar, and the gem-workings of Ceylon were concentrated to meet the foreign merchant-king's requirements, just as, in a later age, this role was occupied first by Broach and later by Surat. Frankincense, the only non-Indian product, was probably picked up at a port on the Hadhramaut coast on the return voyage.

To plan a lengthy trading voyage from the head of the Red Sea and across the Indian Ocean without preliminary exploration is unthinkable ; Egyptian sailors during many centuries before had searched out and found the sea-way to Somaliland and where they went Phoenicians would find it easy to follow ; no doubt they took Egyptian pilots with them and they would also find a way of securing a pilot for India at some port on the Arabian coast, just as Vasco da Gama obtained the help of the Arab pilot, Ibn Majid, 'Lion of the Sea', to guide his ships from Malindi to Calicut. At this time the ports of Saba, the Sheba of the Bible, were the usual marts where Egyptian and Phoenician products were exchanged for those of India and Ceylon, which were carried thence by caravan to their next destination. This being so, it is a safe inference that Solomon's 'wisdom' in equipping a fleet for direct trade with these countries had the elimination of very greedy middlemen in the persons of Sabaeen traders as its mainspring of action. Here I may mention that the term 'Sabaeen' as equivalent to Arab lasted at least till A.D. 400, for Fa-hien, who travelled in India and Ceylon (399-414), in describing Anuradhapura in Ceylon (Beale's translation), says : 'in the city there are many Vaisya elders and Sabaeen merchants whose houses are stately and beautiful.' Even today men of mixed Arab and Indian descent, the so-called 'Moormen', form an important part of the mercantile community of Ceylon, and largely monopolize the gem trade.

Incidentally the fact that Solomon, when he wished to create a Red Sea fleet of traders, was under the necessity of building the required vessels with the aid of artizans brought from Tyre, proves that no Phoenician vessels were then trading in Asiatic waters, none of which could be chartered for the voyage to Ophir. This of itself shatters the great and hoary myth of a wide extension of Phoenician commerce to India and beyond. It also furnishes definite proof that no direct sea-trade with India had existed before *c.* 950 B.C.

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The Phoenician design of Solomon's ships marked a new era in Red Sea naval construction. No longer was the frameless design of Ancient Egypt the accepted standard ; the employment of Phoenician shipwrights introduced the use of supporting frames, thereby enabling depth and cargo space to be increased together with a reduction in the beam ; the vessels became more weatherly and better fitted to engage in voyages of protracted duration.

After Solomon's brief incursion into oversea trading, we find no records of ship traffic in the Red Sea until the final brief revival of native Egypt under the Saitic Pharaohs Psamtik I (663-609 B.C.) and Necho (609-593). Under these enlightened and vigorous rulers the country recovered much of its ancient power ; both freely employed Greeks and Phoenicians in their service, the Greeks in the army, the Phoenicians together with Greeks in the navy. Both peoples had the sea in their blood ; influence from these quarters must have been one of the main factors in the formulation of Necho's scheme to provide facilities for the conveyance of commodities between the Mediterranean and the Red Sea by re-opening the Middle Empire canal through the Wadi Tumilat. Ordered to desist by an oracle or influenced by the warning of his engineers that the higher level of the Red Sea (as supposed to exist) above that of the Mediterranean would involve the flooding of the Delta, the scheme was abandoned after an immense amount of work had been done. Instead, Necho decided to test the possibility of circumnavigating Africa. According to Herodotus this feat was actually accomplished. Necho's ship, officered and presumably manned by Phoenician seamen, was duly despatched, southbound down the Red Sea. Eventually it returned to Egypt through the Mediterranean, after a voyage lasting nearly three years, its reality vouched for by the fact, scorned by Herodotus, that on the second half of the voyage the sun rose on the right hand. Doubt and denial are often expressed today of the truth of this tale, but from what is known of the long voyages of the Polynesians to Easter Island, New Zealand and elsewhere and of those of the Javanese to Madagascar some 2,000 years ago, I see no valid reason to scorn the possibility of seasoned Phoenician sailors carrying through such a venture if favoured by exceptionally favourable conditions of winds and currents so long as their hearts failed them not.

After Necho's time all attempts to open up oversea trade in the Indian Ocean were abandoned by the Egyptians, control of the trade communications with the Orient remaining with the Sabaeans, seated in the ports of southwest Arabia. Thence resorted trading vessels from

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India, and the south coast of Arabia, from Oman, and some ports in the Persian Gulf, their cargoes unladen and sent by caravan northward to the Nabataeans of Edom—the second series of middlemen distributors.

With the conquest of Egypt by Darius of Persia in 525 B.C. Ancient Egypt comes to an end: sea traffic inspired by native Egyptians is never heard of again. Once the country was pacified Darius conceived a scheme for the opening of a direct sea-route between the two greatest lands under his rule—Persia and Egypt. To this end he despatched an exploring party under the Greek Scylax of Caryanda, to survey the coastline and havens of Arabia from the mouth of the Euphrates round to Suez, a voyage successfully accomplished. As an essential complement to this commercial scheme Darius resumed and completed the Nile-Suez canal begun by Necho; had he lived longer the trade route thus planned would have anticipated by several centuries the trading enterprises of the Alexandrian Greeks, first under the Ptolemies and later under the Caesars. This story of the gradual opening up of direct trade with the Far East is too well known to require detailing. Suffice it that with the rise of Greek supremacy under Alexander, Greek commerce became dominant and what the Sabaeans had done previously in a small and ineffective manner to exploit Indian sea-trade was taken up and developed by the Greeks to enormous dimensions, particularly in later days, in their enterprising endeavour to satisfy the needs of Roman extravagance. The indulgence of Rome in ostentatious competition by the wealthy in the squandering of money on foreign luxuries and rarities was the ultimate factor that in the last century B.C. finally brought about the opening of the sea gates of India, which had been assailed intermittently after the explorers sent out by Darius and Alexander had demonstrated the vast possibilities of direct, long-distance sea communication, and its immense advantages over a combination of coasting voyages and desert caravan traffic. Alexander may justly be counted the father of sea-trade between East and West.

INDIAN SEA-TRADE IN EARLY TIMES

So far we have written as though India herself had been passive in regard to sea-trade to and from her ports—a looker-on upon the brave and venturesome doings of other nations and races. This is but partially true, and arises from the fact that her own sea-traffic was in the main coastwise within her own boundaries and what portion was oversea traffic was far more largely directed to the east than to the west. Greek and Graeco-Roman traffic with India was restricted almost entirely

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to the west coast and as our only definite knowledge of ancient Indian trade is derived from Greek and Roman writers, Indian trade with the Malay Archipelago and Peninsula has failed to receive adequate notice. There are, however, a few definite indications that there was considerable indigenous maritime activity to and fro across the Indian Ocean from a very early date. There are passages even in the Sanscrit epics, the Mahabharata and Ramayana, containing allusions to voyages to other countries by sea, but these are vague and undatable and merely tell us the fact that several centuries B.C. sea-trade was vigorously carried on.

More definite are some Buddhist legends embodied in the *Pitakas* and *Jatakas*, particularly the latter, dating from the late centuries B.C. Among the former, the *Sutta Pitaka*, attributed by Rhys Davids⁶ to the fifth century B.C., tells how, 'long ago', merchants when sailing on oversea voyages out of sight of land, carried with them 'shore-sighting birds' which were used to locate the nearest land when the ship's position became doubtful. The same custom is related by Pliny,⁷ as practised by the seamen of Ceylon when making sea voyages, 'as they are unable to steer by the stars'.

Another passage of this *Pitaka* mentions voyages lasting for six months, made in ships which were brought ashore and laid up during the winter, a custom curiously similar to that practised until recently by the Sinhalese owners of the antique sewn-plank craft called *Yatra oruwa* (FIG. 4).

Still more valuable is the evidence of the *Jatakas*, which may go back as far as 400 B.C., but which enshrine folk tales of much greater antiquity. The most important is the *Baberu-Jataka*,⁸ wherein we read of Indian merchants who made periodical voyages to Baberu (Babylon). The story as told is dressed fantastically, but there can be little doubt that it has as its basis the tradition of regular trade by sea between Western India and the Babylonian river-towns, carried on by Indians and comprising peacocks as one of the articles of export from India. This trade probably existed from much earlier times, for other *Jatakas* make much mention of the seaports of Bharukaccha (Broach) and Surparaka (Supara), and of long and perilous oversea voyages made therefrom to distant lands—to Suvarnabhumi in particular, which appears to be that Farther India we now call the Malay Peninsula.

⁶ *Jour. Roy. Asiatic Soc.*, April 1899, p. 432.

⁷ Pliny, *N.H.*, vi, 22

⁸ *Jatakas*, Cambridge edn. 1907, III, 83.

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The discovery of Indian timber in the Babylonian ruins of Birs Nimroud and of Ur (Mukayyar) in buildings dating c. 604–538 B.C.⁹ furnishes conclusive evidence of sea-trade conducted in fairly large vessels between India and the Euphrates at this early period. This sea-trade with Babylon, operated in Indian ships, cannot be less ancient than the sixth century B.C., and is possibly a good deal older. Its continuation in Achaemenid times is rendered probable by the discovery of Indian artifacts in the ruins of Susa consisting of libation cups, bangles and ornaments made from the Indian *sankha* or chank, fished even yet in quantities on the Kathiawar coast.¹⁰ The age of these ruins brings Indian trade with Persia into the fifth century B.C., but some of the ornaments—one bangle in particular, obtained from a lower stratum—belong probably to a much older period, for Susa was a capital of the Elamites long before the Achaemenid occupation of the site. I have also identified carved chank ornaments from Tello, the ancient Lagash, in the Louvre Museum.

Commercial relations in Indian bottoms were undoubtedly carried on with Muza and Aden in very early times. Probably the earliest distinct record of this is the notice by Agatharcides of Alexandria who, about the middle of the second century B.C., saw large Indian ships arriving at a Sabaeen port from Patala on the Indus. He notes how wealthy the Sabaeans had become by reason of their country being the exchange centre for Indian goods so brought by sea. This direct Indian trade is confirmed by the story told by Eudoxus, who himself twice voyaged to India towards the end of the second century (118–112 B.C.) This related how an Indian ship had been found derelict off the entrance to the Red Sea with one famished Indian sailor alone alive. This man, brought to Egypt by the coastguard, subsequently offered to show the route to be followed on the voyage to India and acted as pilot of the first trading expedition captained by Eudoxus.¹¹ Probably the sailor utilized the monsoon winds and set a direct course to some port in India—possibly this was the first hint the Egyptian Greeks received of the regularity of the monsoons and thus prepared the way for the so-called ‘discovery’ alleged to have been made by Hippalos in the first century A.D.

Of Indian sea-faring in our own era I shall not now treat except to mention that the author of the *Periplus of the Erythraean Sea* states

⁹ J. Kennedy, *J.R.A.S.*, 1898, p. 267.

¹⁰ J. Hornell, *Marine Zoology of Okhamandal*, pt. II, p. 2, London, 1916.

¹¹ Strabo, *Geog.*, II, 3, 4.



MODEL OF A MIEPE FROM LAMU, LAMU ARCHIPELAGO (see p. 250)
by courtesy of the Science Museum, London

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definitely that Indian ships traded regularly with Apologos, at the head of the Persian Gulf, and with Ommana, a port on the south coast of the gulf ; he notes as among the principal items of trade—logs of sasamina,

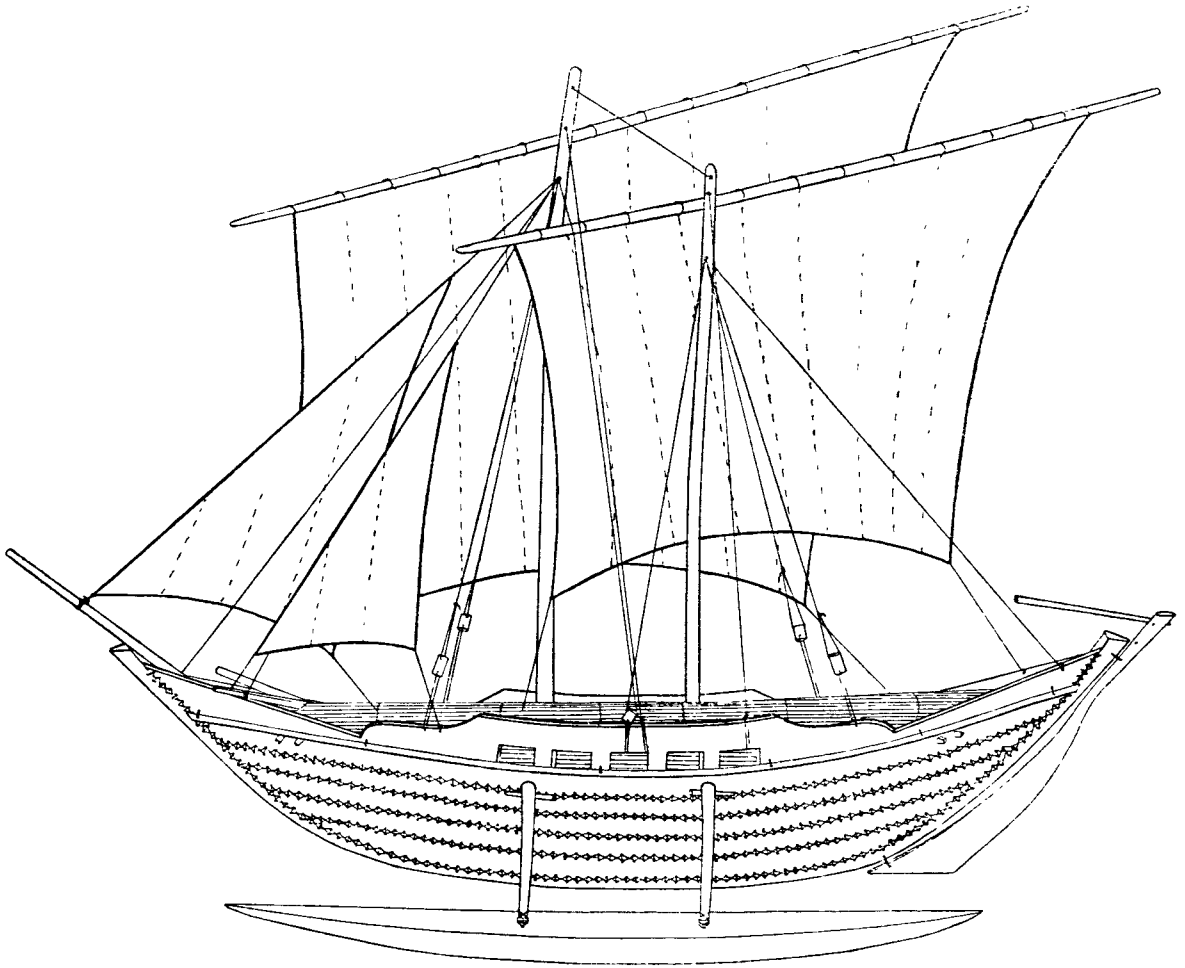


FIG. 4. A SINHALESE OUTRIGGER COASTER

This type was still in use in the early part of this century. All parts of the hull are 'sewed' together with coir twine (original) (see p. 247)

ebony, sandalwood, and wood for rafters (teak?), copper and other commodities. He adds that Ommana is a shipbuilding centre, exporting completed vessels called *madarata* to Arabia, meaning Hadhramaut

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and Yemen. An identical trade exists now in the export of timber (teak) from the Malabar coast to supply the needs of the many ship-yards on the Arabian coasts.

It is of great interest to note that Glazer derives the term *madarata* directly from the Arabic *muddarra'at*, meaning 'fastened with palm fibre'. If correct this exactly describes the outstanding feature of indigenous ship construction on the Indian, Arabian and East African coasts until European influence wrought a revolution. Marco Polo (13th century) records it as a characteristic of the Perso-Arab ships of Ormuz; the author of the *Periplus* (1st century), Vasco da Gama (15th century), and Capt. W. F. W. Owen (early 19th century) have all noted the same method of construction as in use in their times on the east coast of Africa. Today the masula boat of Madras is built after the same manner as was also the fine square-rigged *Mtepe* of the Lamu Archipelago until it became extinct a few years ago (see PLATE).

The sea-trade of the east coast of India never became well known to the Alexandrian Greeks or to the Romans; on the other hand much more information upon this aspect of ancient Indian enterprise is contained in inscriptions and documents than in the case of the west coast trade. The records of Indian and Sinhalese dynasties frequently mention naval expeditions against oversea nations. Vijaya and his followers, the progenitors of the Sinhalese people, are reputed to have reached Ceylon about 550 B.C. from a port at the head of the Bay of Bengal. For centuries thereafter South Indian inscriptions and Sinhalese chronicles testify to the frequent invasion of Ceylon by Chola and Pandyan forces and even to occasional counter-invasions of South India by Sinhalese. Boats of considerable size were employed, as mounted troops are mentioned; horses, elephants and chariots also passed as marriage gifts between the royal houses of South India and Ceylon.

Extension of Indian overseas communications was particularly active in the time of Chandragupta, a great warrior statesman brought to the front by the impact of Europe upon India. In his day great progress was made in the development of intercourse with the Far East; it is probable that at this time (c. 300 B.C.) Hindus began to found settlements in Java, Sumatra and Cambodia and to introduce Brahmanism into those countries. Trade with Chavakam, meaning Sumatra and Java, is alluded to in several old Tamil poems quoted by Kanakasabhai Pillai in his *Tamils 1800 years ago*. Sometimes the current set the other way, for Abu Zaid (c. A.D. 916) relates a story of an invasion of the Pandyan country by the Maharaja of Java, incidentally

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mentioning that it was about ten days sail between the two kingdoms, 'but when the wind is light the journey may take as much as twenty days'; for Java, Sumatra should here be read. There are besides frequent references to countries on the northern and eastern shores of the Bay of Bengal and to Sumatra and Java farther east, in the oldest classical writers of South India; these show conclusively that inter-communication was easier and far more frequent than is usually realized and this infers the use of large and seaworthy vessels.

From very early days trade between Ceylon and Bengal was important. The chank-shells for the bangles esteemed so necessary by Hindu ladies in Bengal were obtained entirely from the South Indian and Ceylon fisheries, and the muslins of Bengal returned in exchange. Fa Hian, the Chinese Buddhist who travelled in India between A.D. 399 and 414, is one of the first writers who specifically mentions this shipping route in ancient days; in a passage describing his pilgrimage to see the Buddhist relics in the possession of the Sinhalese he relates how he sailed from the mouth of the Ganges to Ceylon in 'a great merchant ship'. In 673 this port, Tamralipta or Tamluk, near the modern Midnapore, was found still prosperous by the later pilgrim I-Tsing, who there embarked when returning to China.

The most conclusive proof of the high development of purely Indian oversea trade in ancient times is afforded by the great colonizing epoch of the first seven centuries of our era. Within this period, at ill-determined dates, several waves of colonizing energy carried large bodies of Indians from the northwestern shores of the Bay of Bengal—Telugus from Telingana, Klings from Kalinga, and a Magadha element from Bengal—to Pegu and the Tenasserim coast, to Sumatra, Java and Cambodia. Other emigrants sailed from South India and Gujarat. The written records have gone, tradition is scanty and unreliable, but stone monuments remain in plenty, and in unrivalled magnificence that bears silent witness to Indian inspiration and workmanship.

THE INDONESIAN MIGRATIONS TO MADAGASCAR

Scarcely anything is known of this great series of emigrations beyond the bare fact that large ships set sail from Java and Sumatra at various times during the first millennium of our era, bearing large numbers of Indonesians across the Indian Ocean to found settlements in Madagascar. When these took place we do not know, nor yet their cause; the probability is that the earlier voyages were occasioned

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indirectly by the impact of Indian civilization upon the peoples of the Malay Archipelago. This appears to have caused an outburst of many-sided energy among the inhabitants of the large Western Islands comparable to that which followed the infusion of northern blood into the people of Mycenaean culture in Greece in pre-classic days. Whatever the cause, we find these Indonesians building great two-masted ships, fitted with double outriggers such as we still see in use in eastern Indonesia today. Two quarter-rudders as used in the larger sailing craft of the Bugis of Macassar were also used, and the rectangular oblong sails set obliquely on bipod masts were similar in all respects to the rig still *uniquely* characteristic of the Indonesian rig. Many vessels of this type are to be seen on the sculptured panels of the great Buddhist stupa of Boro Budur in Java, built in the 8th or 9th century A.D. (FIG. 5). The south-east trade-wind and the equatorial current running westward favour rapid and easy voyages direct to Madagascar across the Indian Ocean but there are reasons to believe that some of the voyages—there were at least two great migrations, separated by several hundred years, apart from occasional single voyages between the major migrations—were coastwise *viâ* Ceylon, Aden and the east coast of Africa, use being made on this route of the monsoon winds.

These Indonesian settlers in Madagascar were inveterate slavers. At frequent intervals they raided the African coast, returning with thousands of negro slaves belonging to various tribes speaking diverse languages and dialects. As late as the beginning of the nineteenth century the Sakalavas of the northwestern coast were accustomed to raid the Comoro Islands intermittently: Capt. Owen records one such raid in which 3,000 slaves were captured.¹²

Today the entire native population of Madagascar speak Malagasy irrespective of the somatic relationship of the speakers—it is spoken both by people of more or less pure Indonesian stock of definitely Mongoloid affinity and by burly crinkly-haired negro people, purely African in their physical characteristics. The Malagasy language as we now know is closely related to Kawi, the ancient speech of Java, so we are presented with the problem of finding an explanation for the strange fact that the negro tribes of Madagascar should have lost their own language although their numbers greatly exceed those of the stranger people whose language they have adopted.

¹² Capt. W. F. W. Owen, *Narrative of Voyages to explore the shores of Africa, Arabia and Madagascar*, p. 373, London, 1833.

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Had negro tribes been in occupation of the island when the Indonesian settlers arrived, it is unbelievable that all should have abandoned their own language or that it should not have modified to some extent that of the incomers. The answer, in my opinion, must be sought solely in the close association between the two races entailed by the practice of slavery on a great scale by the Indonesians. Judging from the strong slave-raiding propensity of the people of Madagascar,

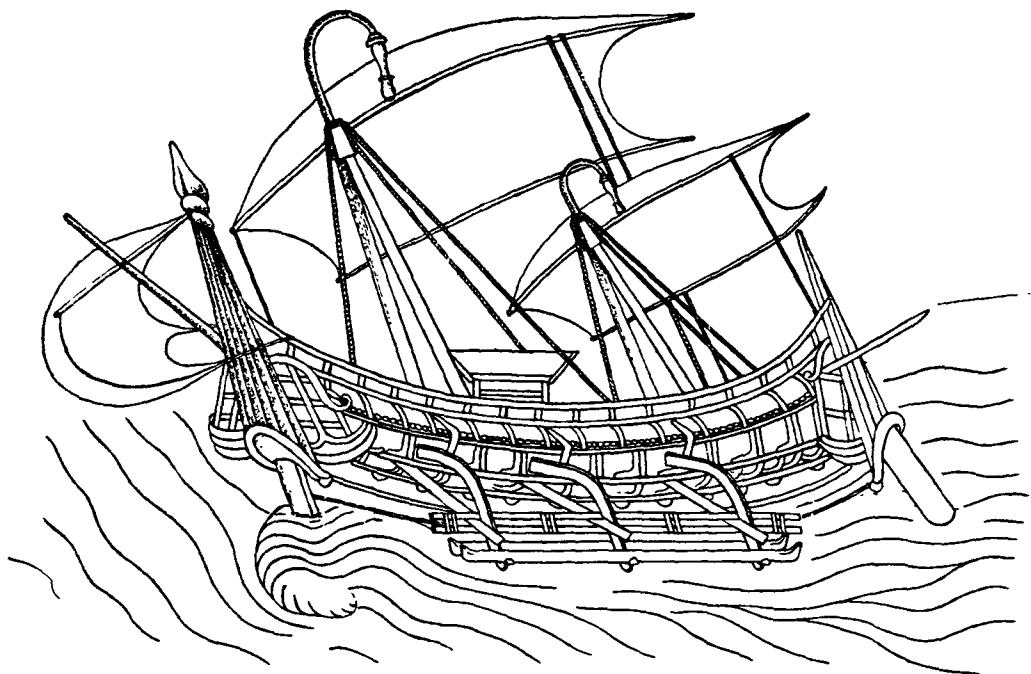


FIG. 5. A LARGE JAVANESE SHIP OF THE 8TH OR 9TH CENTURY A.D. FROM THE BORO BUDUR SCULPTURES, JAVA (see p. 252) (Original restoration)

exercised as we have seen until well into the nineteenth century, the ancestors of the African elements in the present population must have arrived in the island as slaves. Belonging to tribes of different languages, as we may safely presume was the case, the speech of the slave-owners would of necessity become the *lingua franca* of communication between masters and slaves ; in the course of time it would become the universal and sole speech of the whole population. We see the same phenomenon in the New World ; because of parallel conditions the languages of

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American negroes conform to those of the men who held their forefathers in the bonds of slavery. In the United States and Jamaica, English is the speech of the negro population ; in Brazil, the negroes speak Portuguese ; in Spanish America they talk a corrupt Castilian, and in Haiti it is French.

CHINESE TRADE IN THE INDIAN OCEAN

The Chinese trade by sea with the West now comes into view ; it is noteworthy that the Arabs (? Yemenites) held commercial relations from quite early times. We find from Chinese annals that even about A.D. 300 enterprising traders from the southern Arabian coast had established a colony at Canton, but we do not know in what ships they voyaged to China. Somewhat later (end of fourth century) we hear of Chinese travellers in India and Ceylon who used both Indian and Chinese vessels—probably Chinese to some port in the Malay Peninsula and thence to India in Indian ships.

It seems that the commencement of regular sea-trade between China and India cannot date back beyond the middle of the fourth century A.D.. The first direct intercourse between China and India is ascribed to the early years of the Eastern Tsin dynasty (317-420). The earlier phase of this trade appears to have been conducted in a combination of Arabian, Indian and Chinese ships, which gave way in great measure to the larger Chinese junks as soon as the Chinese began to appreciate the immense value of India and Persia as markets for their goods.

Probably the earliest notice of Chinese vessels in Indian waters belongs to the first half of the fifth century when, according to Hamza of Ispahan and to Ma'sudi, the ships of India and China were constantly to be seen moored as high up the Euphrates as Hira, near Kufa, a city lying some 45 miles southwest of Babylon.¹³

As Yule points out, after this a gradual recession took place in the location of the terminal port of Chinese traffic in their sea trade with the West.¹⁴ From Hira it descended to Obolla, the ancient Apologos ; from Obolla it was transferred to the neighbouring city of Basra ; next to Siraf on the northern shore of the Gulf, and from Siraf successively to Kish and Hormuz. Chinese annals of the T'ang dynasty of the 7th and 8th centuries describe the course followed by their junks in the

¹³ Yule, *Cathay and the Way Thither*, I, 83, London, 1915.

¹⁴ Yule, *loc. cit.*, p. 87.

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voyage from Kwang-chau (Canton) to the Euphrates. It also appears that Chinese ships in equally early times voyaged to Aden.

By the 12th century the farthest port of exchange resorted to by Chinese vessels appears to have been Debal, the then most famous port in Sind—probably Karachi. Al Idrisi describes it as a station whither came ‘ships laden with the productions of U’man and the vessels of China and India’. Baruh (Broach), he also states, was a port for the vessels coming from China as also for those from Sind.

From this time onwards until the early part of the fifteenth century, contemporary notices of Chinese trading ships calling or loading at Indian ports become frequent.

The chief Indian ports resorted to by Chinese junks during the 13th and 14th centuries appear to have been Kayal on the Gulf of Mannar, Quilon in South Travancore, with Calicut and the fine bay south of Mount Deli in North Malabar. On the site of ‘the noble city of Kayal’, which had ceased to be a seaport before the arrival of the Portuguese about A.D. 1500, owing to the silting up of its harbour, I have found innumerable fragments of Chinese celadon pottery, much of it thick and coarse and suggestive of the type of pots used for preserved ginger—a sweet-meat greatly loved by Indians. Here Marco Polo landed at the end of the 13th century, and it is he also who mentions Delai (Mount Deli) as a place where ‘the ships of Mangi come’. Quilon he mentions, but not as a terminal port for Chinese ships, though from other sources it is obvious that this port was used as a clearing house by Arabian and Chinese traders. In the long intercourse between China and India it is plain that with altering circumstances—the wane of one sea power and the rise of another, to say nothing of mercantile changes—a port occupying the premier position in one century might be supplanted in the next by some other. Kayal, Quilon, Calicut, and Deli are four regarding which we have clear evidence.

In passing it is notable that early in the 13th century a large Chinese fleet brought to the Malabar coast several hundreds of Chinese immigrants who remained in the country for trade and industry. Abd er-Razzak in the 15th century (1442) speaks of the sea-faring population of Calicut being called *China bhachagan* (China boys), which can only mean that the Mapilla population had then a strong Chinese strain in it. We also know from Chinese authorities, as well as from the Sinhalese chronicle *Rajawaliya*, that the Chinese sent a powerful naval force under the eunuch Cheng Ho against Ceylon in the beginning of

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the 15th century, an expedition which resulted in the capture of the Sinhalese king Vijaya Bahu II and his deportation to China.

The best contemporary description of the Chinese vessels that traded to the West is that of Marco Polo, who sailed with a small fleet of junks from China to India and Persia at the end of the 13th century.

How, and exactly when, Chinese trading fleets ceased to frequent Indian waters is something of a mystery. Nicolo Conti's description of the great trading ships seen by him in Indian seas is, so far as I know, the latest surviving account of the Chinese junk trade with India. He describes them as having five masts, and with the lower part of the hull constructed of triple planking and some ships provided with watertight bulkheads. His description follows so closely that of Marco Polo that I am inclined to think that he had Marco's *Travels* before him when he wrote the account.

It is certain that no Chinese ships were in the Indian trade when the Portuguese arrived in India in 1498 ; the increase of piracy on the West Coast of India and the jealousy of Gujarati and Arab trading interests may have been the main factors in the discontinuance of the Chinese junk trade with India and the Persian Gulf.

Mirrors

by DR BRUNO SCHWEIG

A STORY from Corea called 'The Magic Mirror' tells us that a young peasant went from his village to the capital in order to sell his products and to buy some commodities. Passing a shop-window he was struck by having seen somebody in the window who could not have been anybody else but his twin-brother. He was amazed at this because his brother was living in another town. He stood still and gazed, and now he was sure that it was his twin-brother, because when he smiled at him he smiled back. 'I must have this magic', he thought. So he entered the shop and asked whether he could buy this strange thing in which was to be seen his counterpart. The shopkeeper wrapped it up and remarked laughingly: 'Be careful not to crack it, so that your brother will not get lost'. The peasant took it home, but before he could unpack it to show his family he was called away on urgent business.

So it was his mother-in-law who, anxious to know what her son had bought, became the first to look at it. She saw an old woman and cried out: 'What on earth has come into his mind to bring this woman with him from the town'! She called her daughter, who came with her baby in her arms. She looked at the thing and became furious at once: 'Oh, he has bought another wife from the town and a child as well. How will he be able to feed us all? Two wives! That will not do. My brother must come'. The brother came and when he, with his sister and mother, looked at it, they found a whole family, and the brother said: 'It is clear, he has brought another family and will get rid of us'. So, when the peasant returned home they started shouting at him, making violent accusations. Eventually they went to the judge. He asked for the mysterious thing in which were all the folks and, when it was brought, immediately found out that it was, of course, a mirror. It took him much pains to explain that they saw the images of themselves, and it was only after some time that he succeeded in reconciling the family.

This little story shows that even at a time when mirrors could be bought in shops the writer of the story quoted thought it probable that

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people existed who knew nothing about looking-glasses and the possibility of images of themselves. It makes it clear to us that the human intellect must have been developed to a comparatively high degree, before it could conceive the idea of a reflected image. That is probably the reason why we find mirrors relatively late in the history of mankind. It also throws some light on the origin of all these tales where human, or semi-human beings like mermaids, nymphs, etc., are thought to exist in the water. The image dimly seen in the floods, but not recognized, may have been the cause of the imaginative beliefs.

The English language has three words for a surface reflecting an image: looking-glass, mirror and speculum. The word reflector, which one could be tempted to add, does not create an image as a rule, and has a different meaning.

'Looking-glass' is self-explaining and applies only to the special kind made of glass. 'Mirror' and 'speculum' are the two general expressions; 'speculum', however, is nowadays chiefly used for optical or surgical instruments, especially where metal is concerned.

'Mirror', or 'mirour' as it was written in the 18th century and even later, comes from the old French word *mirour* which was preceded by *miradour*. This originates in the late Latin *miratorium*, from *mirare* = to look at, to behold, an offspring of the classical Latin *admirari* = to wonder, admire (compare miracle).

'Speculum' is also taken from the Romans who used it in the same sense, from *specere* = to look, to observe.

These two words, mirror and speculum, or their derivations, are found in all European and related languages but that of the Slavs: in French *miroir*, in Dutch and German *Spiegel*, in Danish *Spejl*, in Norwegian *Speil*, in Swedish *Spegel*, in Italian, *specchio* and in Spanish *espejo*.

Though, of course, not so universally used as they are today, mirrors were already well known several thousand years ago, in quite different parts of the world. Once the idea of the mirror was conceived, doubtless by looking at the calm surface of a pool, pond, well, lake or river, other mediums more suitable for indoor purposes were searched for. Metals, first gold and silver, then alloys of tin and copper, often with additions of arsenic to increase the whiteness, were used. A glassy rock, obsidian, found in the vicinity of volcanoes, was polished into a mirror. It is an impure semi-transparent stone, varying in

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colour from grey to black. The chemical composition is essentially the same as that of granite. The fact that one consolidated at the surface, rapidly and under low pressure, while the other cooled slowly at great depth and under such pressure that the escape of the steam and other gases it contained was greatly impeded, produced the marked difference in their physical conditions. Another transparent or translucent kind of stone, phenacite, was also employed. It is probably crystallized gypsum.

Who were the first to use these materials as mirrors is difficult to decide. In the tombs of old mummies in Peru, mirrors made of a vitrified stone like obsidian were discovered, some concave, some convex, also mirrors made of Incas-stone. This is a compact pyrite, or marcasite, capable of a very brilliant polish and still used for ornaments, because it looks like white bright steel but never rusts, a very suitable stone for a mirror. Similarly, mirrors of obsidian were extensively employed by the ancient Mexicans, who quarried the stone called 'itzli' at the Cerro de la Navajas or 'Hill of Knives' near Timapan.

The Chinese seem to have used mirrors, even of glass, more than 2000 years B.C., as mentioned in the Chinese classics. Unfortunately we do not know much more than that of the mirrors of Old China. Some bronze mirrors of the Han dynasty, showing the fine pattern, are reproduced (FIGS. 1, 2).

Among the Japanese the metal mirror held a most prominent place, and was thought so important as to have been almost an object of worship. It was considered an emblem of the soul of woman, and at least two mirrors were included in every bride's trousseau. These mirrors, most of them convex, were generally made in bronze, polished by amalgam and very highly ornamented or engraved on the back. In Japanese life and legend the mirror is one of the most characteristic features, hence the story from Corea. The so called 'Magic Mirror of Japan' not only reflects the onlooker's own face, but when held to the light in a particular manner throws bright-lined images from its polished surface on to a screen corresponding to the figures on the back. This seems impossible, but these mirrors are manufactured in a way that the ornaments of the back were originally also visible on the front. They were then ground and polished away, leaving only invisible inequalities of curvature and thickness, or density, of the metal, yet enough to cause the amazing reflections. Superstitious people could be brought to the belief that everything could be seen in these mirrors, the past as well as the future.

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Egypt is the land whose mirrors are the best known of the ancient cultures. Obsidian was employed as well as metals, and later on glass. In the museum of Turin are two little glass mirrors framed in wood and fixed at the base of small Egyptian figures in white stone. In the excavations at Sakkarah some of these little mirrors were found, being slightly convex, round, and all framed at the bottom of pottery figures. Though by reason of their fragility very few have been preserved, yet enough remain to show that mirrors of glass were well known. In imitation of obsidian it was chiefly black, opaque glass, reflecting from the front, and not of a high perfection. Therefore, metal mirrors were generally preferred. They were mostly oval in shape, with a handle, and decorated with ornaments and signs.

From the Egyptians the art of mirror-making passed to the Phoenicians, and also to the Hebrews. Little is known of Phoenician mirrors, but a mirror found at Cyprus and in the New York museum, is attributed to the Phoenicians. The disk-mirror was fixed at the head of the cymbal player, who was apparently supposed to be placed on a table. Of the Hebrews we read in the Pentateuch that Moses collected mirrors of brass at the Tabernacle to make the brazen laver. That was about 1500 B.C.

Just to show that mirrors were found in every country wherever a higher culture had developed, we look again to the East. In Ceylon, according to the Mahawanso Chronicle of the Sinhalese kings, 306 B.C., 'mirrors of glittering glass were carried in procession'. The Burmese and Hindoo idols are, even to this day, often decorated by triangular mirrors arranged in pattern together with small pieces of coloured glass. Some figures so adorned must belong to a remote age. At Sidon in Syria, where it is said that the use of glass in the occidental culture sphere had its origin rather than in Egypt, mirrors of glass were manufactured, as mentioned by Pliny. One has been found at San Remo.

The miraculous properties ascribed to mirrors made them attractive not only to poets and magicians, as seen by the previously mentioned Corean and Japanese legends, or in 'Snow-White and the Seven Dwarfs', where the wicked Queen is consulting her magic mirror, but philosophers also found them useful; Socrates employed a mirror for moral instruction. He urged his pupils, we are told, to look at themselves frequently in the glass, that he might beg any of them who should be gratified at his own beauty not to spoil the dignity of the body by a dishonourable state of mind. The Greek tragedians, living

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at about the same time, frequently mention mirrors. Praxiteles, the sculptor, in 328 B.C. taught the use of silver in the manufacture of mirrors. Whether Aristotle has described the making of glass mirrors, as often stated, is not certain, no particular instance being given. Mirrors were unknown to Homer. Therefore we may assume that the Greeks became acquainted with mirrors, both metal and glass, about 600 B.C.

But it was nearly 2500 years later, in 1867, that the first specimen of a Greek mirror was discovered at Corinth. Others were found at Mycenae, at Ialysos, at Vaphio and in Crete, etc., but most of the Greek mirrors are from Corinth, though the number extant is comparatively small. They are hand-mirrors, usually provided with a handle, or 'box' mirrors, consisting of two metallic circular discs, fitting into each other and sometimes fastened together by a hinge. The best specimens of both kinds of mirror date from a little before 400 B.C. The mirror proper consisted of a thin disc of metal, mostly bronze, which was slightly convex and polished on one side. The other was left plain or showed a design. Usually the mirrors were highly decorated. The handle sometimes took the form of a statuette, especially of Aphrodite supported on a pedestal. Of the 'box' mirror the upper disc or cover was ornamented on the outside with a design on low relief; inside it was polished to form the mirror. The lower disc was decorated inside with engraved figures.

In the British Museum is a mirror from Crete on the back of which is shown a figure of Eros that has been silvered over. The bronze case used to contain it bears on the back a group of Aphrodite and Eros in relief hammered into it from the reverse side. Eros was a favourite subject for mirror decoration. A bronze mirror-case, found at Corinth, shows an Eros with two girls on the outside in relief; on the inside a nymph, playing with Pan on a beach, is incised. Another mirror, representing 'Ganymede carried away by the eagle', is estimated to be one of the best examples of relief.

Divination is also a purpose for which mirrors were used in Greece. At the Temple of Ceres at Patrae, when a sick person wanted to know the outcome of his illness, a mirror was let down into a well by means of a string, until it grazed the surface of the water with the rim. After a little while it was pulled up, and, when looked into, showed the face of the enquirer, alive or dead, so we are told. The oracle of Apollo near Cyanaeca also made use of the combination of a fountain with a mirror, where they believed it to be possible to perceive whatever they

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wished to behold. To impress the visitors to the Temple of Persephone near Acacesium a mirror was fitted in the wall of a passage reflecting dimly the face of the onlooker, but showing very clearly the goddess on the throne.

Similar to the Greek mirrors were those of Etruria in Italy. The extant examples far outnumber the Greek. The style of execution varies considerably according to the different dates, some of them being of a rude and archaic character, while others are among the most artistic treasures of our museums. Most of them belong to the 3rd and 4th centuries B.C., chiefly resembling the Greek disc-mirrors in form, box-mirrors being rare. The subjects of the designs incised on the back are, as a rule, taken from Greek mythology and legend (Trojan War, birth of Athena, Aphrodite and Adonis, etc.), or from the daily life, the toilet, the bath, the palaestra (gymnasium). The names of the persons represented are frequently added in Etruscan letters and orthography; Apul=Apollo, Achle=Achilles, Achmem-rum=Agamemnon. This may be taken as a proof of the Etruscan origin, although some may have been imported from Greece. But the Greek models are always followed, even where distinctly Etruscan figures are introduced, such as the heroes Aelius and Caelius Vibena on a mirror in the British Museum. Among the finest and most beautiful specimens may be mentioned the famous Semele-mirror and the Healing of Telephus, in which Achilles is shown scraping the healing rust from the lance with a crescent-shaped knife. Most mirrors were of metal, but glass was also used. Fragments of a circular glass mirror, foliated with a thin sheet of lead, have been discovered among the excavations at Lillebonne.

The Romans, well acquainted with the culture of the Greeks and the Etruscans, produced as a rule similar mirrors to these. Their mirrors were chiefly made at Brundisium, of a mixture of copper and tin, of zinc or silvered copper, and sometimes of pure silver. Others were of glass. The mirrors, mostly hand mirrors, were either plain or decorated in the Greek and Etruscan fashion. As metal mirrors easily tarnished, a sponge with powdered pumice stone was often fastened to the setting. We may note here that pumice powder is used to this day for cleaning and polishing purposes. Lucretius reports two opposite mirrors reflecting the image several times. Under the emperors the art developed and larger mirrors were manufactured. They were either fixed to the wall, or working up and down like a

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window sash. Some appear to have been large enough to take in the whole figure as described by Seneca, who also speaks of a mirror bevelled all over, repeating the image from all the facettes. Virgil praises the crystal pureness of a mirror as resembling 'the smooth clearness of the Fucian Lake'. Pliny described a semi-opaque glass mirror, let in a wall. In Pompeii a mirror of square black glass fixed to the wall by three holes has been found. The Emperor Domitianus, when he suspected that plots were formed against him, lined a gallery, in which he used to walk, with mirrors of phenacite to show everything done behind his back.

Wherever Roman civilization spread, the use of mirrors, some of them of a special kind, was introduced. The reflection was provided by glasses foliated with lead. These mirrors were surprisingly small, the glass part seldom being larger than 3 centimetres, so that it appears doubtful whether this kind was really intended for use as mirrors or as toys for children and for decorative purposes. These mirrors bear a striking resemblance to those manufactured in Germany about ten centuries later. Most of the mirrors brought to the Roman provinces were, of course, of metal. A mirror found at Desborough (FIG. 5), now in the British Museum, shows that the Celtic population of England had made excellent mirrors before the Roman conquest. This example, enriched with an incised Celtic pattern, exhibits native originality by the shape of the handle. Of the very few bronze mirrors found in Britain, the backs are, curiously enough, engraved, as are the Etruscan mirrors, not cast or stamped (FIGS. 3, 4).

Summarizing, we may say of this period that the Romans used all available suitable materials for mirrors—natural stones, glass in its opaque form, reflecting from the surface, or, when transparent, foliated with tin, lead or alloys. Polished metal, however, was the most widely employed medium. The same methods were in use for some centuries to come, until the improvements in glass-making resulted in its predominance.

If the Middle Ages are taken to comprise a period of a round thousand years from about A.D. 500–1500, we find a noticeable change in the manufacture of mirrors during that period. Looking-glasses were known, but metal mirrors were more generally used, so that it seems as if the art of making mirrors of glass was sometimes lost for several centuries. At the very end of the Middle Ages a new method, the foliating of glass with tin-amalgam, revolutionized the manufacture

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of mirrors and gave a new impetus to the art, widening the field of its employment to a degree hitherto unknown.

The following quotations, scanty as they are, indicate the use of both metal and glass in the course of the thousand years, and in different countries. In 625 Pope Boniface IV sent Queen Ethelberga of Northumbria a present of a silver mirror. Isidore, Bishop of Seville, who died A.D. 636, says of glass: 'There is no material better adapted for making mirrors'. On many of the sculptured stones of Scotland, belonging probably to the seventh, eighth and ninth centuries, representations of metal mirrors, mirror-cases, and combs occur. In England, in the early times of the Anglo-Saxons, mirrors, presumably of metal, were well known. About 1100 Alhagen, the Arabian, wrote his treatise on optics, and as he speaks of iron and silver mirrors, but never mentions glass, the art of making looking-glasses must have been forgotten some time after Isidore, or could not have come into common use.

In the wardrobe account of Edward I the item occurs of 'a comb and a mirror of silver gilt'. About the same time Vincent de Beauvais, writing in 1240, in France, says that the mirror of glass and lead is the best of all — 'quia vitrium propter transparentiam melius recipit radios'. (As glass because of its transparency best receives the rays). The English Franciscan Friar Johannes Peccan also mentions glass-mirrors, and says they were covered on the back with lead, no image being reflected if the lead was scraped off. Roger Bacon gives a similar description.

A guild of glass-makers existed at Nuremberg as early as 1373. Among other objects small convex mirrors were made there in large quantities and continued to be made until comparatively recent times. They were known as 'Bull's eyes' (*Ochsenaugen*). Small globes of glass were blown, into which, while still hot, was passed through the pipe of the glassmaker a mixture of lead or tin, antimony and tar or colophony. When the globe was entirely coated with the metallic compound and cooled, it was cut into small convex pieces of relatively perfect mirrors. Whether there is any relation to the similarly manufactured small Roman mirrors, mentioned above, we do not know. Three Venetians, one of them Nicolo Corro, were cheated as early as 1317 by a German, a 'magister of Alemania' who broke his agreement to instruct them in the making of glass mirrors, leaving in their hands a large quantity of useless alum and soot. It will be remembered that the other methods of making glass mirrors consisted in coating with metal either by sticking or pouring molten tin or lead on to the

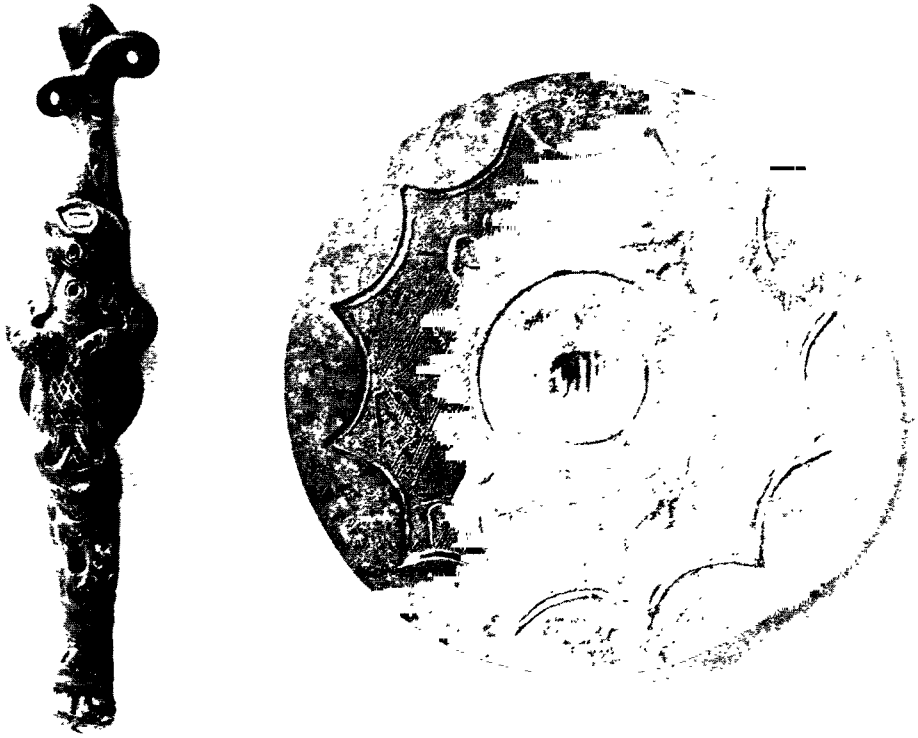


FIG. 1. CHINESE BRONZE MIRROR, HAN DYNASTY (see p. 250)
 left: handle of hand-mirror, right: belt-mirror with gold, silver and turquoise inlay
 British Museum

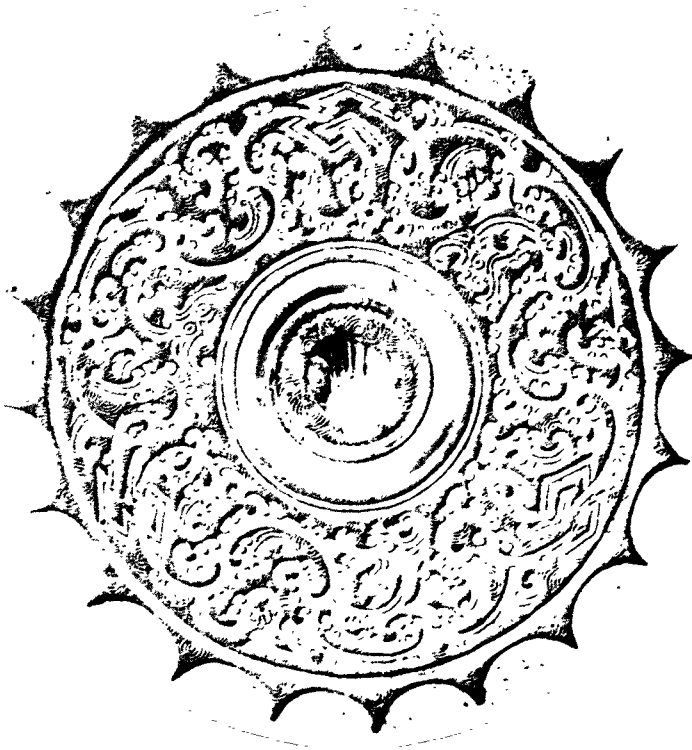


FIG. 2. CHINESE BRONZE MIRROR, HAN DYNASTY (see p. 250)
 British Museum

PLATE II

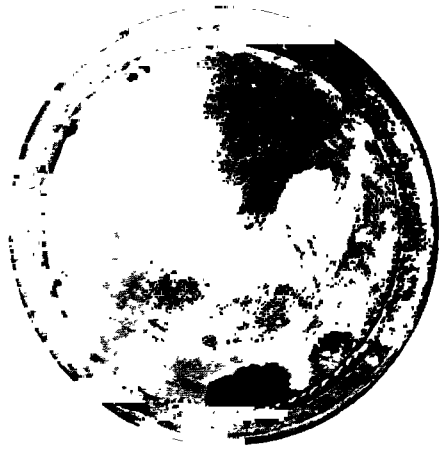
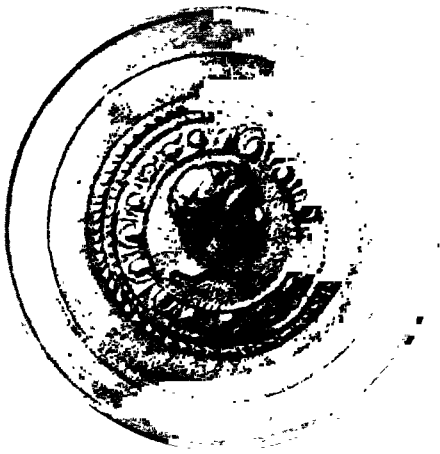


FIG. 3. ROMAN BRONZ MIRROR (see p. 263)
British Museum

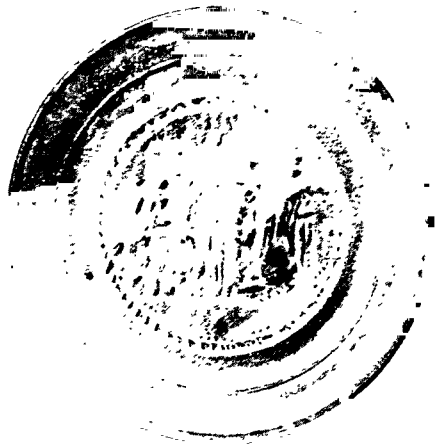
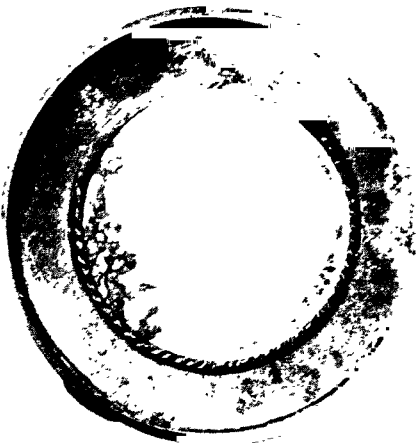


FIG. 4. ROMAN POCKET-MIRROR FROM CODDISHAM, SUFFOLK (see p. 263)
British Museum

PLATE III

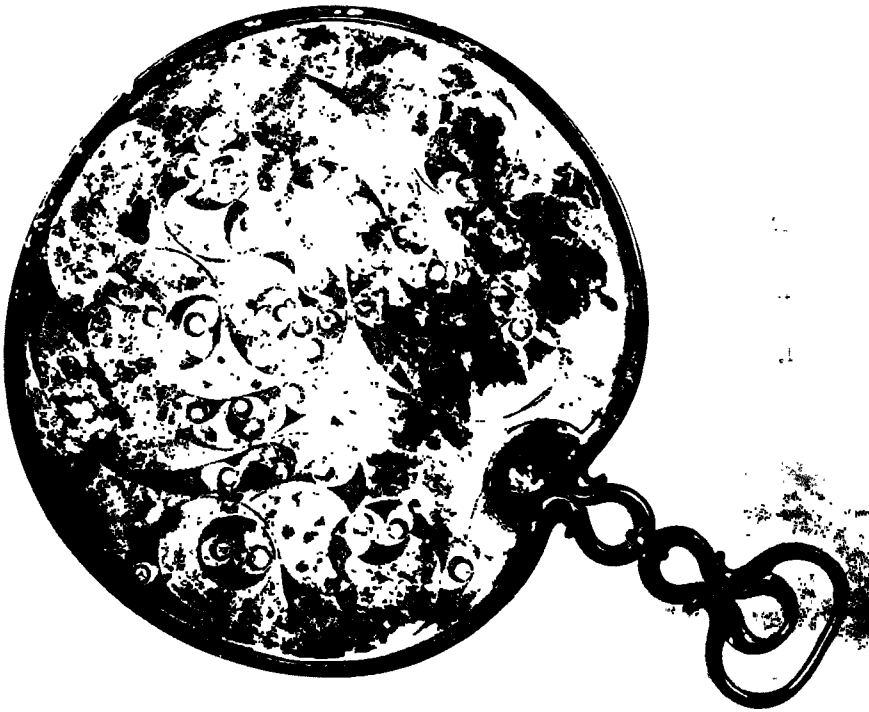
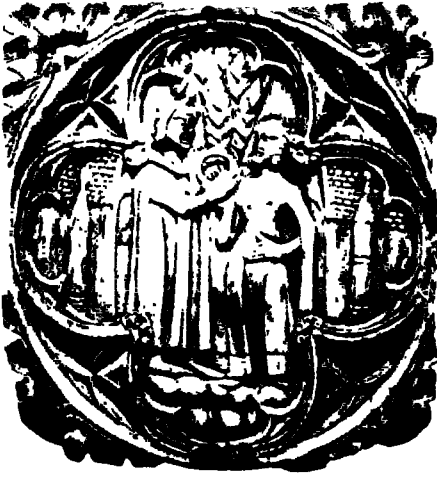


FIG. 5. BRONZE MIRROR, WITH ENGRAVED BACK, FROM DESBOROUGH,
NORTHANTS. (see p. 263)
British Museum



FIG. 6. VENETIAN MIRROR, 16TH CENTURY.
OVAL PLAQUE FROM BACK (see p. 268)
British Museum

PLATE IV



0 1IN.
0 3CM.



0 1IN.
0 3CM.



0 1IN.
0 3CM.



0 1IN.
0 3CM.

FIGS. 7-10. ENAMELLED GOTHIC AND RENAISSANCE MIRROR BACKS. (See p. 208.)
Top left — French mirror, late 14th cent.; *Top right* — French, late 16th cent.;
Bottom left — Limousin or North French, late 15th cent.; *Bottom right* — French, 15th cent.
British Museum

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glass. This latter method, was, for instance, mentioned by Raimundus Lullius, and described by Conrad von Wegenberg in his book on Nature. This process is said to have been in use in Germany and elsewhere until the middle of the sixteenth century. A mirror of gold, with figure subjects, enamelled and garnished with pearls, is entered in the accounts of the Duke of Burgundy for 1389. In the same account are mentioned a great number of gold and silver mirrors, some of which were richly chased, enamelled and jewelled.

Most of the mirrors used during the Middle Ages were small. That is easily understood, where metal is concerned, and as to glass, the art of making large sheets was not yet discovered. For it was not till 1350 that enough flat colourless glass was supplied by a glass maker of Chiddingfold to glaze the windows in St. George's Chapel, Windsor, and the chapel of St. Stephen's, Westminster. Not before the fifteenth century was glass more generally used for windows, the substitute having been shaved horn, parchment and sometimes mica. All these materials were unsuitable for the making of mirrors, for technical and artistic reasons.

In the fifteenth century, mirrors of glass or crystal are occasionally represented in Flemish pictures. For example, in Van Eyck's portrait of Jan Arnolfini and his wife, painted in 1434, a convex mirror on the wall clearly reflects the room's contents. This was obviously a specimen of a mirror of comparatively large size, but such mirrors were rare.

Pocket-mirrors, however, and small hand-mirrors, were largely used during the Middle Ages. The pocket-mirrors consisted of small circular plaques of polished metal, usually steel or silver, fixed in a shallow circular box covered with a lid, resembling in some way the 'box-mirrors' of the Etruscan and Roman. The mirror cases were chiefly made of ivory, carved with relief representations of love or domestic scenes, hunting and games, and sometimes illustrations of popular poetry and romance. Gold and silver, enamels, ebony, tortoise-shell inlaid or rich with lapis or other costly materials, were used. Indeed, the highest decorative efforts of workmanship and costly jewellery lavished on the frames, makes it seem as if the mirror was only an excuse for all this enrichment (FIGS. 7-10).

Little hand-mirrors were indispensable adjuncts to the toilets of both sexes during the sixteenth and seventeenth centuries, and were worn publicly by men in brooches and at their girdles; the women, moreover, had them inserted in their fans. They were mostly furnished with a short handle. In Massinger's play, 'The City Madam', written

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about 1624, these mirrors are referred to in this stage direction :—
'Enter Lady Frugal, Anne, Mary and Millicent in several affected postures with looking glasses at their girdles'. The mirrors, in an embossed frame, were often about four inches high and two wide.

Outside Europe mirrors were also produced during the Middle Ages. Specimens of Persian looking-glasses have been found at Tabriz, Ispahan, and other places. From Ibn Battah, 1332, we know that glass was made in Irak, the mirrors therefore probably being of genuine Persian manufacture. Of China, too, a Portuguese traveller writes, about 1560, 'the house was built with a loft and very fair . . . and all of it was a mirror'.

Thevenot, about 1660, says that the Mongolian women 'are so fond of seeing themselves that they wear a bit of looking-glass an inch in diameter, set in their rings instead of precious stone'. So it will be seen that the use and demand for mirrors was general at the close of the Middle Ages.

The year 1500, being the turning point between the Middle Ages and modern times, is also a landmark in the history of mirrors. It sees the creation of the modern looking-glass. What is it that distinguishes this 'modern' mirror from its predecessors? A modern mirror, in contrast to a mirror of ancient times, or of the Middle Ages, is a mirror of good quality, which can be built in any size or dimension desired. This could not be achieved by using large metal sheets, as such mirrors would easily bend and distort the images. It could only be done by employing large plates of glass and making them highly reflective by foliating with metal. Therefore two conditions have to be met : large plain glass sheets must have been available as well as a suitable method of applying the metal-coating. The art of producing glass plates of sufficient size had already been developed, though further and perhaps more striking progress was made during the sixteenth and seventeenth centuries.

Our attention is therefore focused on the method of applying the reflecting metal backing. The new method, resulting in the 'modern' looking-glass, is the Tin-Amalgam Process. This process can be applied to practically any size of glass. It dominated the manufacture of mirrors for nearly 400 years, and many a mirror, still hanging on our walls, was made by this method. It is not known exactly when or by whom this process was invented, but we do, however, know the following :—

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In 1503 two inhabitants of Murano, the brothers Andrea and Domenico del Gallo, were authorized by the Venetian council to make mirrors with a Flemish firm in Flanders, which was the only glass-house possessing the secret of making large-size mirrors of glass. The two brothers obtained in 1507 the exclusive privilege of manufacturing mirrors in Murano, Venice, for a period of twenty years. They were made by the tin-amalgam process, for Johannes Porter of Naples exactly describes the method after his visit to Venice about 1550. As in 1503 the Flemish firm was already in existence, and was the only glass-house using this process, the assumption that the invention of the tin-amalgam process dated from then can hardly be far out.

The tin-amalgam process, often incorrectly called the mercury process, simply consists in laying a thin and even tin-foil on to glass by means of mercury as a cementing medium. After the superfluous quicksilver has been squeezed away, the remaining metal film is composed of about 80 per cent. tin and 20 per cent. mercury. The main difference between the process hitherto employed, and the new method, was that cold metal and not hot or molten materials, was applied to the glass, thereby avoiding all the difficulties which were connected with the old method. Further, any size or shape of glass could be treated as the necessary tin-foils were easily provided, however large the glass might be. The application being simple, the process seemed to be ideal.

Venice made good use of the new method introduced by the brothers Gallo and developed the art of making looking-glasses on a commercial scale. The Republic enjoyed a much-prized monopoly for about a century and a half. As early as 1564 the mirror-makers of Venice formed themselves into a corporation with peculiar and exceptional privileges. The glass for the mirror was made in the same way as sheet glass before the invention of drawn sheet. Blown cylinders of glass were slit, flattened on a stone, carefully polished by 'ironing', and afterwards frequently bevelled. The glass was remarkably pure and uniform, and the sheets sometimes of considerable dimensions. As the silvering was beautifully bright, the products of the Venice-Murano glass-houses were welcomed everywhere, and a large and lucrative trade sprang up.

For example, three Venetian mirrors of crystal are mentioned in the French royal accounts of 1528, and another in the inventory of the *château de Nevers*, 1566. In 1597, in the marriage contract of *Françoise de Schomberg* a mirror of Venice glass is described, and in the inventory of *Gabrielle d'Estrées* (1599), among other richly decorated mirrors,

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occurs one of Venetian glass enriched with coloured enamel and set in a coloured wood frame (FIG. 6). So impressive and valuable were mirrors that Magellan, as his companion Pigafetta tells us, took looking glasses with them on their voyage round the world between 1519 and 1522. A small mirror of glass was presented as a rarity by the Venetian Republic to Marie de Medici in 1600.

How precious the Venetian mirrors were can be gauged from the inventory of the effects of M. Jean-Baptiste Colbert, minister of Louis XIV, made on the minister's death in 1683. A Venetian mirror, 46 by 26 inches, in a silver frame, is valued at 8016 livres, whereas a picture by Raphael is put down at 3000 livres! It is therefore only natural that the Venetians guarded with the utmost jealousy the secret of their manufacture. By their statutes any glass-maker, carrying his art into a foreign state, was ordered to return on the pain of imprisonment of his nearest relatives. Should he disagree, the emissaries were delegated to slay him.

The Sources of Geoffrey of Monmouth

I. The 'Pre-Roman' King-List

by STUART PIGGOTT

THE study of Geoffrey's book and of the allied Welsh texts is a subject of such complexity, and has produced such a mass of technical literature, that the intrusion of a newcomer into these jealously guarded preserves of recondite scholarship is naturally liable to direct at once the cold stare of disapproval, or at best the wan smile of tolerance upon one so rash. I am not unmindful that in a previous world-conflict Sir (Emeritus Professor) Flinders Petrie put forward views on the *Historia*¹ from an outsider's standpoint which were instantly demolished in a few quietly incisive notes by Professor R. W. Chambers.² But, despite the vast tangle of adherent commentary which now envelops Geoffrey's book to an extent that all too often dwarfs the actual text, it seems likely that certain basic questions—is it a work of fiction or of fact, or if both, in what proportions—should be answerable to some extent by enquiring whether certain passages read convincingly as sheer invention, and if not, what prevented the author from making them so. I hope to show that one can trace in the *Historia* a use of certain documentary sources which to the best of my knowledge have not been recognized in full before. I venture therefore to put forward these tentative ideas in the hope that they may be followed up or refuted by those more qualified for the task than myself, examining the problem for the first time and from the outside, and in those enforced circumstances in which the only really accessible works of reference are the *King's Regulations* and the *Manual of Military Law*. As a contrast it is a pleasure to record my thanks to those who have aided me, notably Professor Ifor Williams, who has given me invaluable advice and helped to eradicate the more egregious errors from my argument.

Among the names of the witnesses to the foundation charter (1129) of Osney Abbey (now among the more depressing outskirts of

¹ *Proc. Brit. Academy*, 1917-18, pp. 251-78.

² *History*, 1919-20, N.S. III, 225-28; IV, 34-45.

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Oxford) appear Walter the Archdeacon, heading the list, and one Geoffrey Arthur. (*Testibus Waltero Archidiacono . . . Gaufrido Arturo. . .*)³ A few years later the second of these produced a work on early British history, in which his indebtedness to his friend the learned archdeacon was abundantly acknowledged and which, if any work is to be given the title, deserves the name of a medieval best-seller. The *Historia Regum Britanniae*, which from the evidence of the dedications appears to have been most probably written in the spring of 1136,⁴ was immensely and instantaneously popular. Despite the enormous destruction of medieval manuscripts at and since the Dissolution, nearly two hundred of the *Historia* are now extant, of which a fourth date from within two generations of its first appearance, and the influence, direct and indirect, which it has had upon English literature and popular thought up to the present day is probably unequalled among medieval writings.

The popularity of the *Historia* lay primarily in its novelty. It presented, as we should now put it, early British history from a new angle, giving an account, avowedly from the Celtic standpoint, which made the Dark Ages anything but dark, and displayed endless vistas of pre-Roman kings each with an uncouth name and a wealth of biographical anecdote, while dominating the whole of the latter part of the book the gorgeous, fabulous figure of Arthur, champion of the British, held the scene. All this obviously made for popularity, and there may be more of professional jealousy than critical faculty to be detected in William of Newburgh's remarks on his successful rival in the field of British history, whose name Arthur he unfairly suggests is a nickname ridiculing his obsession with a magnificent but entirely fictitious hero passed off as solemn fact.⁵ For it was as a considered contribution to historical literature that the *Historia* appeared, and any doubts that might arise in the reader's mind were to be set at rest by Geoffrey's disclaimer to be anything more than the translator of an ancient book in the British tongue, brought from Brittany by Walter the archdeacon.

Such was the book that Geoffrey, 'of Monmouth' as he styles himself in the preface, brought before the learned world of Stephen's reign. Manuscript copies continue into the 16th century, three printed editions appeared in the same century but none after until that of Giles

³ *Trans. Hon. Soc. Cymmrodorion* 1898-99, p. 56.

⁴ I follow Griscom's dating as set out in the Introduction to his edition of the *Historia* (1929).

⁵ *Hist. Rerum. Angl.*, Proem.

THE SOURCES OF GEOFFREY OF MONMOUTH

in 1844. By this time too the popular feeling for romantic literature had brought into print some of the early Welsh poems and certain chronicles or Bruts, including one closely allied to the *Historia* itself. Critical textual scholarship was in the 19th century being turned to medieval texts as well as classical authors, and Geoffrey's claims to be no more than the translator of an ancient Celtic chronicle were shown to be based on the most insecure foundation. By the end of the century the onslaughts of the critics had left Geoffrey with the reputation of a completely fraudulent romancer, and relegated his chronicle to the same unenviable category of forgeries as that of Richard of Cirencester, fabricated by Charles Bertram in the 18th century, dismissing it as a framework of disjointed scraps plundered from previous historians and liberally covered with fabulous stories, some of which might genuinely derive from Welsh folk-tradition but most owe their origin to Geoffrey's all too inventive mind.

The forgoing sketch of the decline and fall of the *Historia's* reputation prepares us for a closer view of the work itself. What in actual fact do we find in this debatable document? After the dedication to Robert of Gloucester, the story of the translation from an ancient original is told—*quendam britannici sermonis librum uetustissimum . . . codicem illum in latinum sermonem transferre curauit*⁶ (Bk. I, 1). This book, he elsewhere adds, had been brought from Brittany by Walter (*quem Gualterus oxenefordensis archidiaconus ex britannia aduexit*—Bk. XII, 20). After this comes a eulogy of Britain, followed by a long and elaborate version of the curious legend of the voyages and adventures of Brutus, descendant of Aeneas, fighting in the civil wars of the eastern Mediterranean after the fall of Troy and finally arriving to found a civilization in Britain. The main features of this story are given by Nennius, and in Geoffrey's version Brutus is made the founder of a prehistoric British dynasty, the ramifications and descent of which, with appropriate anecdotes, form the substance of three books. Following this are two books dealing with Caesar's campaigns and the Roman occupation, and then one book dealing with Vortigern and the first Saxon inroads. Here the chronicle is interrupted by the insertion of an earlier work of Geoffrey's, the *Vaticinia Merlini*, also purporting to be a translation from the Welsh, and the tale is taken up again in the famous three books dealing with Arthur, and terminated by a book

⁶ All quotations from the *Historia* are taken from Griscom's edition of MS. 1706 (12th century) in the University Library, Cambridge.

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largely consisting of accounts of Constantine, Conan, Vortipore and Mailcun elaborated from the jeremiads of Gildas. Excluding therefore the inserted *Vaticinia* the basic framework falls into six divisions :—

- I—The Brutus Story (Bk. I).
- II—The Pre-Roman Pedigrees (Bks. II–III).
- III—The Roman Invasions and Occupation (Bks. IV–V).
- IV—Vortigern and the first Saxon invasions (Bk. VI).
[*The Prophecies of Merlin* (Bk. VII)].
- V—Arthuriana (Bks. VIII–X).
- VI—The Tyrants and the Saxon Conquest (Bks. XI–XII).

Though at the outset Geoffrey claimed that the whole of his book was merely a translation into Latin of a Welsh (or Breton) original, yet he also admits that, at least in the story of Arthur and Modred, he used verbal information from Archdeacon Walter (*et a walterio oxenefordensi in multis historiis peritissimo uiro audiuit*—Bk. XI, I), and in his preface mentions what appear to be popular ballads of Arthur, whose acts still in his time, he says, *a multis populis quasi inscripta iocunde et memoriter predicarentur* (Bk. I, I), and these must be therefore regarded as contributory sources.⁷ The works of Bede and of Gildas are also mentioned in this preface, and the latter is referred to by name on five subsequent occasions in the *Historia*. Nor, apart from these specific references, is it difficult to recognize borrowings from Livy and from Virgil in section I, and the dedication ends in a Virgilian reminiscence with Geoffrey as another Tityrus. Use was almost certainly made of Jerome's version of the chronicle of Eusebius, either direct or through Nennius, and a wholesale plundering of this latter work is apparent throughout. Using, as Mommsen pointed out, a manuscript in which authorship is attributed not to Nennius but to Gildas,⁸ Geoffrey seems to have regarded the latter as the author not only of the *De Excidio*, which is certainly used in e.g. section VI, but also of the Nennian compilation. His reference to a life of St. Germanus by Gildas (Bk. VI, 13) suggests the passages in Nennius which Zimmer⁹ refers to a lost *Liber Beati Germani*, though there are other references (e.g. Bk. I, 18 ; II, 17 ; III, 5) which do not seem to relate to any text of Nennius as we have it today, nor to the *De Excidio*, yet are attributed to Gildas

⁷ With this may be compared William of Malmesbury's phrase about Arthur—*de quo Britonum nugae hodieque delirant*. (*Gest. Regum. Angl.* I, 8).

⁸ *Mon. Hist. Germ., Chronica Minora*, III, 133. Henry of Huntingdon similarly attributes Nennian material to Gildas.

⁹ *Nennius Vindictus* (1893), passim, esp. 16, 268.

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as well. Professor Chambers showed that the passages dealing with Caesar are likely to have been derived, not direct from the Commentaries, but from Orosius through Bede. Misreadings of proper names (e.g. the Labienus of Orosius and Bede for the Laberius of Caesar) are perpetuated in the same way as Nennius produced a king Bellinus out of another Orosian corruption, and Bede is again copied verbally by Geoffrey in describing the stakes fixed in the bed of the Thames.¹⁰

So much for the more obvious Latin sources, the use of which by Geoffrey has been recognized and acknowledged by all students of the *Historia*. Stripped of these and of the obvious Galfridian embroideries, is there anything left which can be regarded in any way as indicating that the *vetustissimus liber britannici sermonis* really existed, and was not invented by Geoffrey to give authority to his scrap-book, following a practice not unfamiliar to medieval compilers of romances and of course a common device of fiction at all times?

I must at this point return to the Welsh chronicles or Bruts¹¹ mentioned above, since they have more than once been claimed as versions of Geoffrey's lost source-book. Some sixty manuscripts exist, dating from the early 13th century to the 18th century, and while it is clear that they have not as a group received the comparative study they deserve, neither Petrie's enthusiastic championing, nor Griscom's laborious arguments, persuade me that such study will reveal them as being anything but variant translations of the *Historia* into Welsh, with occasional additions from native tradition.¹² The close verbal correspondence between the *Historia* and the earlier Latin texts, and between it and the Bruts, surely show that Geoffrey's book could never be a close translation from a Welsh text *in toto*, and that the Welsh chronicles must copy the *Historia*. It is interesting to note how, from surviving manuscripts, contrasting graphs of the popularity of the Latin and Welsh texts can be plotted. On the basis of the number in each century the initial popularity of the *Historia* is seen to be sustained on a rising curve throughout the 13th into the 14th century, followed by a sudden collapse in the 15th century, although the first printed edition was not until 1508, when manuscript versions naturally cease. The

¹⁰ *History*, 1920, N.S. IV, 35. Cf. also Anscombe's note, *ibid.* 89.

¹¹ For these in general see Griscom's Introduction, ch. VII *et seq.*

¹² Prof. Henry Lewis, writing of the earliest (13th century) MS. of the Brut gives it as his view that 'to all intents and purposes it is a translation of Geoffrey's *Historia*—not a literal translation word-for-word version of course. It gives in Welsh, with insignificant additions and omissions, what Geoffrey gives in Latin' (*in litt.*, Jan. 1941).

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manuscripts of the Bruts start in the early 13th century, show a slight rise in the 14th and 15th centuries, with a marked increase in the 16th and 17th, no doubt as a result of the establishment of the Tudors on the English throne. This rise in the Brut graph at the point where that of the *Historia* descends suggests rather the growth in popularity of a translation, than the renaissance of a forgotten work, among the Welsh reading public. It is interesting to note that the Latin text of the *Historia*, not the Welsh text of the Bruts, was followed by the 14th century compiler of Jesus College manuscript 20, when he added *enwau brenhined y brytanyeit* to his fifty Welsh genealogies.¹³

The *vetustissimus liber* has become more shadowy and less convincing at each stage of this enquiry, but I now hope to show that from the least promising part of the *Historia* something can be extracted which in some measure may exculpate Geoffrey. But while on the one hand it may remove from his name the stigma of a complete liar, it does not on the other tend to increase confidence either in his use of sources, or in his understanding of a document which to a competent Welsh scholar of the 12th century could hardly have been so incomprehensible as it appears to have been to him.

Comment on the sources of the *Historia* has been mainly confined to that part avowedly concerned with the Dark Ages, with some reference to the Brutus story in section I. Section II, the pre-Roman part, has been at once the despair and the laughing-stock of the critics. To Nicholson¹⁴ it was the 'really fabulous' part of the *Historia*, and even Petrie felt it 'safe to say that all before the nineteen kings [ancestral to Catuvellaunus] is entirely romance'.¹⁵ And indeed a fabulous enough recital it is, with Bladud crashing in his gliding trials and Belinus building Billingsgate. But amid all the formless accumulation of legend and fantasy, one feature stands out clearly, and that is the enormous number of persons mentioned by name and in order of succession, whether they be the prehistoric kings or the children of Ebraucus. Sixty-seven successive rulers are enumerated up to Caesar's invasion in the time of Cassibellaunus (Catuvellaunus), while another 48 names of collateral descendants may be added to these, making a total of no less than 115 individuals whose names are recorded. There

¹³ *Y Cymmrodor*, 1887, VIII, 90.

¹⁴ E. W. B. Nicholson, *The Dynasties of Cunedag and the 'Harleian Genealogies'*, *Y Cymmrodor*, 1908, XXI, 81.

¹⁵ loc. cit. 260.

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are obviously far more names than necessary : even Geoffrey's resourceful mind seems to run dry of legend at times, and bald king-lists are given here and there for twenty or so names at a stretch, yet he seems to have felt compelled to write down every name, however meaningless and tedious to the reader. There is nothing here of artistic selection of personage and incident to enhance the narrative, as in the Arthuriana of section v ; the effect is as of someone trying half-heartedly to write imaginary biographical notes in the margin of a page torn from a telephone directory, and makes equally dull reading. But in the curious insistence on names, and still more names, in this section of the *Historia* I believe a clue may exist as to the nature of one at least of Geoffrey's source-books.

The names given to these pre-Roman kings by Geoffrey, except for a few semi-classical titles at the beginning of the series, are in varying forms of Welsh, sometimes thinly latinized, and it has naturally not escaped notice that the majority of them are the names of members of British ruling families of the 6th century and later, which are preserved in medieval Welsh genealogies and king-lists, and even in some instances make their appearance again in more or less their correct context in the latter part of Geoffrey's own book. In discussing one of the extant collections of early Welsh genealogies Nicholson claimed that the names of Geoffrey's prehistoric kings were ' borrowed from *some* MS. of our " genealogies " ' ¹⁶ and it is true that a large number of the names in this section of the *Historia* are found in the collection in question. Historical characters such as Cunedda appear in a prehistoric setting, and their presence does at first sight suggest the haphazard plundering visualized by Nicholson, with Geoffrey, anxious to give ' artistic verisimilitude ' to a handful of legends, picking out a few fine barbaric sounding but indisputably Welsh names such as Gurgint Barbtruc or Rud Hud Hudibras from some genealogical writing to which he could attach his odds and ends of myth and invention. But such a procedure can only imply a sequence of construction of section II of the *Historia* in which the legends came first, later to be attached to the names of early medieval personages. But this in no way accounts for the superfluous names without legends at all, implying a sequence which is exactly the reverse.

Nor (and this is I think still more significant) does such a sequence account for the repetitions of identical names which in fact occur at irregular intervals through section II. Sisillius appears four times, Eldad

¹⁶ loc. cit. 86.

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three, Kimarcus or Kimarius, Coel, Moruid, Gorbonian, Cloten and many others twice. And more than repetitions of individual names, recurrence of similar groups of names, always in the same relative, if not absolute, sequence. Compare for instance the three following :—

	Cloten (Bk. II, 17)	Clotenus
	Dunuallo molmutius (Bk. II, 17)	Gurgintius
Gurgustius	Gurguit barbtruc (III, 11)	Merianus
Sisillius	Sisillius (III, 13)	Bledudo
Kimarcus	Kynarius (III, 14)	Cap
		Oenus
		Sisillius
(Bk. II, 16)		(Bk. III, 19)

Other fixed positions can be detected too: Beli at the beginning, Ferreux and Porrex and Coel at the end of large groups usually separated lamely by Geoffrey by periods of civil wars or the like (e.g. *exinde ciuilis discordia multo tempore populum affixit* at the close of II, 16). These repetitions point surely in one direction—that Geoffrey was not merely choosing names at random from early Welsh pedigrees, but that the framework of section II of the *Historia* was determined by a set of name-sequences in the form of genealogies of varying lengths, which he either misunderstood to the extent of believing them to represent in truth a continuous sequence or deliberately joined them up to suit the plan of his book.

Now fortunately there exist a number of Welsh 'genealogies' going back to the 6th century and even beyond, against which we can test the supposition that we have, embedded in the legendary matter of section II, an unrecorded group of such pedigrees and king-lists. It should be said at the outset that the Galfridian name-sequences appear to be paralleled to a very limited extent in the main group of genealogies that survive and, *pace* Nicholson, it does not seem likely that Geoffrey used, in this part of the *Historia*, any version of the famous genealogies of the North British ruling families which, dating from the late 10th century, are appended to the *Annales Cambriae*, and a text of Nennius, in the early 12th century manuscript known as Harleian 3859,¹⁷ but these, and the later (14th century) versions in Jesus College, MS no. 20,¹⁸ do give us valuable information relating to the actual physical appearance of an early Welsh medieval genealogical compilation, and in so doing help materially to explain certain difficulties in the text of the *Historia*.

¹⁷ Published in *Y Cymmrodor*, 1888, IX, 141–83.

¹⁸ *Ibid.*, 1887, VIII, 83–92.

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The 'genealogies', particularly the more ancient ones, may equally well be lines of descent within a ruling family or merely king-lists, and as they frequently show the claims to descent of numerous families from a common ancestor, several variant versions of a basic line with a group of names in common may exist. In length, they vary from four up to some thirty names, and they run backwards, the names being linked by *map*=son of, so that the eventual ancestor is at the end of the sequence. In Harl. 3859 the names run in vertical columns, thus :—

Ouen map iguel
map catell
map Rotri
map mermin

but in Jesus College MS 20 the names are run across the page as follows :—

Rodri m Meruyn m Ethellt Merch Cynan tintaethwy m Rodri molwynauc
 It is obvious that in such a manuscript as the second, genealogies might easily be run into one another, or divisions made in the wrong place, and without knowledge of the exact families represented it would be almost impossible to disentangle from the *Historia* the individual genealogies. But it is important to note that certain correspondences can be made between the name-sequences in section II and extant medieval Welsh pedigrees, and certain main groups can be detected which probably correspond to original divisions in the manuscript copied.

The founders of the British dynasties in the *Historia* are of course Brutus and his queen Ignoge, and his immediate ancestors are obvious eponyms of the regions of Britain invented by Geoffrey—e.g. Kamber for Cambria and Habren for Sabrina—and the ninth in descent is Ebraucus, presumably a Yorkshireman. He is credited with twenty sons and thirty daughters, whose names, given in Book II, 8, form the first of Geoffrey's meaningless lists. Since the first son is Brutus, and the first two daughters are Gloigin and Ignogin (clearly doublets) it is safe to assume that these names actually constitute another set of pedigrees, in the male and female lines, which traced themselves back to Brutus and which Geoffrey, for want of a better invention, fathered on a philoprogenitive Ebraucus. Such descent from a wholly or partly mythical race-founder is of course common in primitive genealogies, as witness the Saxon kings' descent from Woden; and it is interesting to note that, while I have not come across other Welsh descents traced

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back to Brutus (though such may of course exist) in the early 13th century *De Situ Brecheniauc* St. Kynauc of Merthyr Cynog takes his ancestry back to Annhun the Black, king of the Greeks.¹⁹ Among the names in the Children of Ebraucus list is Margadud. An individual of this name occurs in Bk. XI, 13 as *rex demetarum*, fighting with Brocmail at Bangor in the early 7th century and a *maredud* in JC xxxi²⁰ appears as a grandson of Howel Dda with Regin next but one. This suggests the *Regin map morgetiud* of HG XIII.²⁰ Sisillius appears separated by one name from Moruid; he is Moruid's grandfather in Bk. III, 14-15. *Kincar* occurs further down the list and is a common Welsh name, occurring in e.g. HG II and X, and later still Eldad, the descendant of Sisillius and of Moruid in Bk. III, xxx, 14-15, and Kerin, who as Cherin is another member of the same sequence in this place. Among the 'daughters' is Tangustel; a Tangustela marries Danius, son of Sisillius, in Bk. III, 14, and *Tancoyslt* appears in HG II. Tangwystl, Professor Ifor Williams again informs me, is a name of very frequent occurrence in Welsh.

After this list follows a short succession (Bk. II, 9-14) from Leil to Marganus, dominated by the Leir story. None of the names of this dynasty (ten in all) occur elsewhere in the *Historia*, nor, so far as I have been able to trace, in the Welsh pedigrees I have examined, and I am inclined to regard the Leir episode as a complete legend inserted *en bloc*, names and all, in the same way as the Welsh Bruts interpolate the story of Lludd and Llefelys into the *Historia* text at a later stage. With the appearance of Cunedagius (Cunedda) however in Bk. II, 15, we seem to return to historical characters, and as grandson to him appears Gurgustius (the *Gurgust* of HG VIII) followed by Sisillius and Kimarcus and ending with Ferreux and Porrex. To this sequence one may compare the *Kynvarch m meirchawn m gwrgust letlwm* of JC v, xvii and xxxiv; *Gorust ledlwm* is among the 'Men of the North' in *Boned Gwyr y Gogledd* in Hengwrt 536 (early 13th century).²¹ There is resemblance to the list in the Children of Ebraucus, but much more markedly to the sequences in Bk. III, 11 and 19, as already quoted. Ferreux and Porrex are a pair of those unconvincing twin names of the Hengist and Horsa type, but Porrex turns up again towards the end of a long series of names including the 'Sisillius group' in Bk. III, 19.

¹⁹ Published in *Y Cymmrodor*, 1906, xix, 18-50.

²⁰ References to the genealogies in Harl. 3859 and Jesus College MS. 20 are given as 'HG' and 'JC' respectively, followed by the number of the pedigree.

²¹ Published by Skene, *Four Ancient Books of Wales*, 1868, II, 455.

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A 'bridge passage' of civil wars links us to the establishment of a new dynasty under Cloten in Bk. II, 17, who appears again in Bk. III, 19 and in HG II. He is followed by Dunuallo molmutius and his son Brennius (this is clearly the *Bran hen map dumngual moilmut* of HG x) and Beli. Now king Beli or Belinus suffers from the suspicion that he may sometimes represent nothing more tangible than a misreading in Nennius of a corrupt phrase in Orosius, but Nicholson, and following him Graves,²² have suggested that in some instances the Beli of the Welsh genealogies (e.g. HG I, v) may be an eponymous Belgic god-ancestor. He may therefore here mark the beginning of a new pedigree, which is continued with Gurgint barbtruc, Guithelinus, Sisillius, Kimarius, his brother Danius who marries Tangustela, and Moruid. This sequence will by now be familiar to the reader; I am inclined to think that Gurgustius and Gurgint (Gurgintus in Bk. III, 19), are probably interchangeable. The list of British kings copied from the *Historia* at the end of Jesus College manuscript 20 certainly gives *Gwrgan varyftrwch* for the Gurgustius of Bk. II, 15 and a *Gwmet vrich hir* in Bk. III, 11.

After Moruid we plunge into a mass of names. His sons include Gorbonianus (*Garbaniaun* in HG x), Arthgallo and Peredur, whose son is Runo. Now HG v gives *Run map arthgal*, and *Peretur* appears in HG XII, so some relationship of Run to the two brothers seems established. The appearance of a Gohrbonianus as a nephew of Run by Elidurus suggests the opening of another pedigree of his descendants, which go through Catellus (*Catell* in HG I, XVI), Cherin and Eldaldus, who should be compared with the Kerin and Eldad of Bk. II, 8.

By now Geoffrey is running dry of anecdote. The succession of kings is baldly stated, with the shortest comments, and among the names come Porrex again, Urianus (perhaps the *Urbgen* of Nennius and of HG VIII) and Coillus, the *Coil hen* of HG VIII and many other pedigrees. In the end, the names are given entirely without comment—*cui eliud*, *cui cledaucus*, *cui clotenus* . . .—another example of the 'names at all costs' principle that seems to have counted for so much in Geoffrey's mind in this part of the book. As a successor to Cledaucus the inevitable Sisillius appears, at six removes; he is the son of Cledauc—*seissil map clitauc* in HG XXVI. Before him and after Cloten come Gurgintus and Merianus, suggesting the *merchiawn map gwrgust* of JC XVII; Bledudo is presumably the Bladud of Bk. II, 10, and Sisillius

²² *Trans. St. Albans & Herts. Arch. Soc.*, 1934, p. 161.

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as a descendant of Gurgintus is of course in agreement with the sequences noted already, as is Eldol (Eldaldus ?) as one of the successors of Sisillius. Among the other names in this part of the list one may note Archmail (*Arthmail* in HG XXIX), Redechius, presumably the *Riderch* of HG V, and Samuil Penissel (HG XIX) who appears as two separate individuals !

We now come to the eve of Caesar's invasion, and a new dynasty begins with Heli, who may be Beli again, followed by Cassibellaunus, Tenuantius and Kimbelinus. Now this succession is of considerable archaeological interest. Modern research, based largely on the evidence of the coins of the Belgic rulers, has shown that Tasciovanus must have been the father of Cunobelin, a fact nowhere recorded by classical writers. But Graves²³ pointed out that this relationship must have been preserved in Welsh tradition to find a place in the early medieval genealogies (e.g. HG X, XVI) where the two individuals appear in the correct sequence as ancestors of Cunedda, with Tasciovanus as *Teuhant*, evidently pronounced with a strongly aspirated or guttural 'h,' as the variant *Tecwant* in JC V shows, and philologically undoubtedly to be derived from the same British root as Tasciovanus. In the *Historia* this relationship is preserved, with *Tenuantius* an obvious enough scribal error for *Tehuantius*, and Guiderus the son of Cunobelinus is the *Guidgen* who is his grandson in HG XVI. At the end of this small group (which includes an Arviragus presumably inserted from Juvenal) comes Coilus, and one may note Nennius, brother of Cassibellaunus, the *Nynnyaw* of JC IX.²⁴

We have now threaded our way through the maze of Geoffrey's prehistory, with the genealogies as our clue. What have we gathered from this laborious examination and comparison ? I do not think one can reasonably escape from the conclusion that as one of the main sources for section II of the *Historia* he used a collection of genealogies of the type of, but not identical with, that in Harl. 3859, and one in which the family of Seissill played an important part, and that he did not merely pick out names at random, but actually took the pedigrees as they stood as the framework for the entire section. If there was a *vetustissimus liber* at all, these genealogies seem likely to have formed an

²³ loc. cit. 159-65.

²⁴ On the name 'Nennius' in early Welsh documents see Zimmer, *Nen. Vind.* 130-1.

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important part of it. The precious book, of which the noteworthy feature stressed by Geoffrey was that it recorded, not the exploits of Arthur or the story of Brutus, but the names and deeds of the kings of Britain successively and in order (*actus omnium continue et ex ordine*) seems likely to have been a manuscript of genealogies of some group of ruling families of the Welsh Dark Ages. But one pedigree, the last in the manuscript before him, included the names of Cassibellaunus and Cimbelinus—names familiar to Geoffrey from the classical sources which formed his authorities for the section dealing with Caesar's invasions. Was it this that made Geoffrey relegate the preceding lists of names, meaningless to him, to the pre-Roman era, and was he further influenced in this by the first two pedigrees of his source-book beginning with Brutus? In the retention of the meaningless lists of names without comment we may indeed see the vestige, perhaps the only vestige, of an historical conscience which prevented him from discarding large portions of his source-book for want of interesting anecdote to adorn them.

Considered as a work of pure fiction, section II of the *Historia* fails to convince. Behind the legends and the fantasies which might by themselves be plausibly connected into an agreeable fiction there are constant evidences of something extraneous asserting its existence, something which prevented the author from making a successful composition, something which had a restraining influence upon even Geoffrey's exuberant imagination. Incompletely appreciating their content and their significance, but with a vague feeling that they must at all costs be embodied in his narrative, Geoffrey made the best he could of the impossible material of the genealogies, but his best could not conceal the inevitable indigestibility of his source.

If this was the case, one or two interesting points arise. In the first place Geoffrey must have translated and transposed the pedigrees into the sequence in which they now occur in the Latin text of the *Historia*, and the same would apply to the genealogical information put into the mouth of Cadwallon in Bk. XII, 6. There is however a most curious fragment of an untranslated group of pedigrees embedded intact in the Latin text of Bk. IX, 12, where Geoffrey gives as it were an extract from the Court and Society Column, and lists the guests at Arthur's coronation at Caerleon. An improbable group of dignitaries, with their titles, are given first, and then *uenerunt non minoris dignitatis heroes* in the following remarkable list—

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*Donaut. Mappapo. Cheneus. Mapcoil. Peredur. Maperidur. Grifud.
Mapnogord. Regin. Mapclaut. Eddeliui. Mapoledauc. Kyncar Mabbangan.
Kynmaroc. Gorborean. Masgoit. Worloit. Runmapneton. Kymbelin. Edelnauth.
Maptrunat. Cathleus. Mapkathel. Kynlit. Maptieton.*²⁵

It is immediately apparent that every alternate name begins with *map*, and one has only to replace the same preposition before the others to find the list of 'guests' opening with the well-known table of descent of Dunaut from Coel—the *Dunaut map pappo map Ceneu map Coylhen* of HG XI and of *Boned Gwyr y Gogledd* IV. The occurrence of many names used in section II is to be noted: *Runmapneton* is resolved into the *Run map neithon* of HG XVI, and the end of the list suggests the *map catleu map catel map decion map cinis scaplaut* of the same pedigree. But why has Geoffrey left this rough fragment in an almost unworked state, and why have only half the *map*-prefixes been struck out? It is I think possible that the prefixes may have been lost owing to the manuscript copied by Geoffrey having been written as follows—

Dunaut map pappo
[map] *Cheneus map coil*
[map] *Peredur map peridur*

in such a way that damage to the left-hand margin might remove the alternate prepositions. But we are still left with the puzzle as to why Geoffrey relied on his public swallowing this incompletely doctored genealogical oddment as a genuine list of guests, and it may even suggest that, as the curious treatment of the other genealogical material to form the pre-Roman king-lists hints, he was not so conversant with his British sources as he would have his readers believe, and but imperfectly understood the manuscripts from which he worked.

Whatever the origin of the name-sequences in section II of the *Historia*, this forgoing example leaves no doubt as to its derivation from a group of Dark Age pedigrees closely allied to those in Harleian 3859. It is to this manuscript that I would again direct attention now that we come to the main crux—what was the precise nature of Geoffrey's genealogical source-book and how it may relate to his *vetustissimus liber*? It is of early 12th century date, and the contents are as follows—

²⁵ I am indebted to Professor Henry Lewis for the information that the Welsh Bruts give this list with progressively increased omissions according to the date of the manuscript. Dingestow Court MS. (early 13th century) gives it complete. Shortened versions appear in the Red Book of Hergest (c. 1380) and Hafod I (first half of 14th century), where only six names remain, while Jesus College MS. LXI (15th century) omits it entirely.

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- (a) Notes on world chronology (*De Sex Aetatibus Mundi*).
- (b) The compilation known as *Historia Britonum*.
- (c) Saxon genealogies.
- (d) More from the same source as (a)
- (e) Chronological notes on Welsh history (*Annales Cambriae*).
- (f) Welsh genealogies.
- (g) The twenty-eight cities of Britain.
- (h) The marvels of Britain.

Of these, all but (e) and (f) form the historical compilation known under the general title of the *Historia Britonum* of Nennius which exists in many other manuscripts from the 10th century onwards. Nicholson has shown that there is reason for believing Harl. 3859 to have been made for the cathedral church of St. Davids,²⁶ and it clearly represents a compendium of all that was available to the compilers on the subject of Welsh history—a few chronological notes from classical sources, detached incidents of legend or fact from the Celtic past, annals in the form of marginal notes on a Paschal cycle, and catalogues of towns, battles, wonders and persons. Such catalogues form the staple of the early attempts at history and literature—the Welsh Triads are a very formalized type; the Homeric Catalogue of Ships is a famous example, and the moment Widsith ‘unlocks his word-hoard’ a formidable list of nobility and gentry come tumbling out.

The main basis of the whole of Geoffrey’s book was some version of the Nennian compilation. Zimmer,²⁷ stressing his connexions with Monmouth and Llandaff (where his uncle, Uchtryd, was bishop), was of the opinion that he must have used the south Welsh recension of the *Volumen Britanniae* of 796. Mommsen further pointed out that his references to Gildas as the author of this compilation implies that he used a manuscript of the PQ class, in which the authorship is thus attributed²⁸ (and with some justification, since one of the main sources used by Nennius appears to have been the historical first part of the *De Excidio* with additions to 758). It is difficult to see, from the text of the *Historia*, the exact version of Nennius used, but it does seem to me that little or nothing was used from this source after a date c. 550. Section VI of the *Historia* does seem rather to be based on the second part of the *De Excidio* and on Bede rather than on anything in Nennius, and though an *ex silentio* argument is always dangerous, it is worth while suggesting as a possibility that Geoffrey used not the text as we have it today, but one of the component source-books of the Nennian compilation which ended

²⁶ *Y Cymmrodor*, 1908, XXI, 65.

²⁷ *op. cit.* 277. ²⁸ *Mon. Hist. Germ., Chronica Minora*, III, 133.

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with the *Arthuriana*, which in manuscripts M and N of Mommsen's collation ends with the words *ad hunc quem nunc scribimus annum dcxlvii numeramus*—a date which would agree with the suggestion made above.²⁹

But, together with this Nennius, Geoffrey was using a collection of pedigrees. Now early Welsh genealogies were incorporated in the *Volumen Britannie* itself (e.g. cap. 49) and were presumably derived from some manuscript available to the compiler c. 796; is it possible that Geoffrey's source-book included this material or even was the same as that used by Nennius? Of the individuals mentioned in section II and in the Catalogue of Guests, those whose dates can be fixed by entries in the *Annales* or otherwise ascertained mostly belong to the 5th and 6th centuries (e.g. Dunaut ob. 595, Peridur ob. 580, Redechius (Riderch) c. 575–600, Cunedda c. 400).³⁰ It is worth mentioning that in the Children of Ebraucus appear personages who might be equated with a Margadud (Margetiut) who died in 796 and a Regin who died in 808, and there is a Tangustela (according to Harl. 3859) whose father, Owen, died in 811. It might be therefore necessary to assume a group of pedigrees collected not earlier than the early part of the 9th century, and in effect not so remote from those in Harl. 3859, which date from immediately *post* 954, though the evidence for so late a date is not conclusive, since Maredudd, Regin and Tangwystl are names too common to be distinctive. The pedigrees may therefore date from the late 6th century. Harl. 3859 is however of importance since it seems likely that it is the sole surviving representative of a type of historical compilation, examples of which may well have existed at each of the main centres of the medieval Welsh church. In these, with a Nennius as a nucleus, odd scraps of historical and genealogical information were added from time to time, and it is tempting to assume that Geoffrey may have taken his material from a sister manuscript to Harl. 3859, the property not of St. David's, but of Llandaff, and including a collection of pedigrees relating to a group of families or a region different from that in which the St. David's compiler was interested.

The sources of the anecdotes and stories clothing the genealogical skeleton of section II must be manifold, and await patient disentangling. Certainly Geoffrey used odd scraps of classical information, as for instance the passage about the coal fires at Bath, copied verbatim from

²⁹ A Romano-British nucleus ending in 547 has been assumed by Foord (*Last Age of Roman Britain*, 26). Even Liebermann admits some such source for the Vortigern information (*Essays in Medieval History presented to T. F. Tout*, 1925, no. 3, p. 40).

³⁰ For these dates I follow Nicholson in *Y Cymmrodor*, XXI.

THE SOURCES OF GEOFFREY OF MONMOUTH

Solinus,³¹ and attached to Bladud, while the story of Brennus sacking Rome is attributed to Brennius (Bran). But there is a hint that there may have been marginal notes relating to individuals in the genealogies he copied, even though he did not always understand them completely. One of the sillier stories in the *Historia* is that of Nennius, brother of Cassibellaunus, being killed by Julius Caesar's sword—*erat nomen gladii crocea mors quia nullus euadebat uiuus qui cum illo uulnerabatur* (Bk. iv, 4). Now this odd name for a sword may quite possibly be a muddled reference to the great pestilence of c. 545–550, the *flava pestis* which ravaged the eastern Mediterranean in Justinian's time. The plague spread to Britain by 547, when Mailcun died of the *mortalitas magna*, as the *Annales Cambriae* record under that year, and reached Ireland by 548, and the reference to one Nennius having died of *crocea mors* looks suspiciously like the incorporation and elaboration of a marginal note in Geoffrey's source-book^{31a} recording his death from the plague. (Actually it need not have been the pestilence of 547, for outbreaks of epidemics occurred in the west and north of Britain in 663–664 and 683–685, and the former is referred to in the Irish records as the *buide conaill*, where *buide*=yellow, but at all events the Nennius story in the *Historia* may preserve a genuine 6th or 7th-century note).³²

³¹ *Collect. Rerum Memorab.*, Bk. 22.

^{31a} Professor Ifor Williams, commenting on this, notes that the Welsh Bruts translate *crocea mors* by *angaf glas*, and the *flava pestis* is known as *y fad felyn*, with the adjective *melyn*=yellow, whereas *glas* is used of all shades of colour from grey to purple, including blue and green. In the Gododin *glas* is used of mead, and in Mod. Welsh *angaf glas* is still used for *pallida mors*, and the verb *glasu* for becoming 'blue' with cold, and so *glas* might equate with yellowish-green. On the other hand, with *angaf glas* as a plausible name for a blue steel blade, he suggests a possible mistranslation by Geoffrey of *glas* into *crocea*, this presupposing the note in the original to have been in Welsh, and not in Latin as I visualize.

³² For the Celtic (mainly Irish and Scottish) sources of information on the recurrent plagues affecting Britain in the Dark Ages see Zimmer, op. cit. 302 ff. The death of Mailcun is not recorded by Nennius nor by Geoffrey, although the Bruts insert a note recording his death in a church (e.g. in the Dingestow Court MS.—*Ac or diwed yd aeth y mywn eglwys ger llaw y Castell e hun yn dygannwy ac yno y bu uarw*) and Jesus College LXI further adds that he died because he saw the 'yellow spectre', which may show a folk-memory in the 15th century of the *flava pestis*. The plague was presumably borne along the western seaways from the Mediterranean by rats in the ships, and consequently affected the Highland Zone to a greater degree than the rest of Britain, though the plague of c. 685 seems to have decimated the monasteries at Jarrow (*Lives of the Abbots*, cap. 14) and Lindisfarne (Bede, *Life of St. Cuthbert*, cap. 27) and to have affected other coastal regions such as Selsey (Bede, *Eccl. Hist.* Bk iv cap. 14). I am indebted to the National Library of Wales for the reading from the Dingestow Court Brut.

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It is of course difficult to reconcile the forgoing suggestions with the explicit statements about the *vetustissimus liber* given by Geoffrey himself. Such a manuscript as I have visualized would certainly have been in Latin save for the pedigrees themselves; those in Harl. 3859 are certainly *britannici sermonis*, and if this was so with Geoffrey's genealogies he must, as we have seen, 'translated' them to a certain extent to use them in his book, although his treatment of the Catalogue of Guests suggests that the structure of an early medieval Welsh pedigree was something of a puzzle to him. I have mentioned Llandaff as a possible place of origin for a manuscript which might have supplied him with his material, but it is of course by no means impossible that a south Welsh one might have found its way to Brittany, where Walter is alleged to have discovered it. There appears to be a consensus of opinion in translating *Britannia* as Brittany, but the possibility of its representing 'Britain' as opposed to 'England' should be borne in mind. The Breton episodes attributed to Arthur by Geoffrey may in part be due to misreadings of *Armorica* for *Armonica* (= Arfon, in North Wales)³³ and partly perhaps to confusion with the 3rd-century punitive expedition of the Legio VI Victrix to Brittany under L. Artorius Castus.³⁴ At all events they can hardly be used as evidence of a Breton origin for *vetustissimus liber*. But on the whole it seems to me likely that this all too plausible a tale is an invention of Geoffrey's, based on just enough truth (the use of early documents dealing with Welsh history) to suggest its elaboration, and with the deception carried out with conscious humour, in which the fact that the genealogies did indeed contain names *continue et ex ordine* is played off against the added statement, of which the writer alone would see the incongruous humour, that these dull, bare catalogues were *perpulcris orationibus* in their literary style. I should like to think that it may have been with a certain enjoyment that he saw the Welsh deluded by his rehash of their own genealogies, and deceived in that very study which no doubt in his time, as in Earle's day, was 'an Art in England, but in Wales Nature, where they are borne with Heraldry in their mouthes, and each Name is a Pedegree'.

³³ As suggested by Meissner (*The Celtic Church after the Synod of Whitby*, 66). I cannot however agree with his arguments in favour of the use of the same ancient Celtic sources by Geoffrey and the writer of the *Life of Oswald* in 1165. The latter seems merely to have copied direct from the *Historia*.

³⁴ Foord, op. cit. 52.

Notes and News

MADRAS CATAMARANS

Mr Herbert M. Vaughan writes :—

I was much interested in reading Mr James Hornell's note on Madras Catamarans in the December number. Perhaps the following account of these South Indian boats, by an observant naval chaplain during the warfare between the British and French fleets in the Bay of Bengal between 1779-1782, may be of some interest. The writer was my great-grandfather, the Reverend Benjamin Millingchamp, who was then acting chaplain to Admiral Sir Edward Hughes on board his flagship, the *Superbe*.

' December 21st [1781]. The Boats of the Squadron were ordered to tow off the Catamarans with the Eighteen Pounders. The Catamarans are composed of three Logs of Wood lashed together, coarsely fashioned, with a small breakwater forward. Three of these properly secured bring off a Gun or Anchor for a 74 Gun Ship. It is incredible to what a distance at sea the native Fishermen will risk themselves on these uncouth Vessels with an old tattered sail and with what dexterity they manage 'em when it blows hard, one of the party always supporting the Mast, whilst the others rigg out their Paddles to windward and seat themselves on the Flat end at a good distance from the Catamaran, contriving by this means to carry a pressed Sail. On a Catamaran with a little Rice and Water these poor Men will undertake a Voyage of a week or nine days and appear to bear their fate with a great degree of Cheerfulness '.

PRIMITIVE CULTURE IN NIGERIA AND BRITAIN

In the first decade of this century the people of Nigeria were still mostly in a prehistoric phase of civilization. The wheel was not used in any form, and there were no mills, no potter's wheel and no carts. This is the more remarkable in that for centuries pilgrims to Mecca must have seen the wheel in its various forms, and many survived the perils of the road to return. A comparison of things here with things found in England of prehistoric date may be of interest.

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One is struck by the small proportion of imperishable things in the primitive community. Mud houses thatched with grass, calabashes, baskets, skin or cloth bags and clothing, woven grass mats—all these decay quickly. Worn out iron tools are beaten up by the smith and re-used. Broken pots are broken up into smaller fragments and beaten into the mud floors. Almost the only durable relics are saddle-stone querns, perforated by prolonged use, and the circles of stones on which their granaries (*rumbus*) have been built to escape the white ant. Talking of grain storage, the people of Bornu store grain in deep pits lined with mats, and the grain pits at Woodbury looked obvious enough. Grain is usually stored in the ear to delay the ravages of pests.

The grinding of corn was—and is—done on primitive neolithic saddle-querns. In houses this is mounted about crutch high, sloping forward, so that the flour drops from the front edge on to a tray or calabash. The grain is heaped, a handful at a time, above the rubber.

HOUSE-BUILDING. In the normal round house the circle is marked out with a string from a peg. No foundations are dug. The bricks are made of brick-earth and dried grass well mixed and wetted and trodden into pug. A handful of this slapped on the hard ground produces the plano-convex brick, with the marks of the hand on the convex side. These dry in the sun as they lie. The mortar is the same mud, wet. The diameter of the usual round house varies from about 8 to 20 feet, but the maximum diameter is limited by the length of the palm-leaf ribs used as rafters. (By providing concentric bearing-surfaces at ten-foot intervals I built a sound roof 60 feet in diameter, but that was not normal). The angle of the roof is not less than 45°. The door opens inwards, and is hinged on a pivot, moving in a cupped stone at the bottom, and a similar point held in a ringbolt at the top. Floors of beaten mud are surfaced with potsherds beaten in and treated with the gummy infusion of the locust bean. I have seen a section showing eleven floors one above the other. A typical farmstead consists of a ring of half-a-dozen huts with granaries between, round a courtyard, which is entered by a gatehouse (*zauri*).

POTTERY. Pots are made with astonishing accuracy by the coil method. Spherical pots a foot in diameter, with a mouth an inch wide, are made by movement of the pot as it grows in all directions in a shallow saucer-shaped depression in a stone. After drying in the sun



1. THE HIND, GLEANN DOMHAIN, ARGYLL ($\frac{1}{2}$)



2. FISH, GORGE OF THE LSK, NEAR ROSLIN, MIDLOTHIAN $\frac{1}{2}$ ($\frac{1}{2}$)



3. STYLIZED ANIMAL, DUNADD, ARGYLL

Pl. J. S. Richardson

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the pots are piled in a heap, packed with dry grass. The grass is fired and the burning of the pots is done in one evening. The result is a strong cooking-pot which can stand the fire. The shapes of the pots are not unlike those of our Iron Age, but the bottoms are usually rounded. Some of the water-pots have narrow necks with everted rims, and handles. No kiln is used. The round-bottomed cooking-pot stands over the fire on three large lumps of clay, like loom-weights, which resist fire better than stones. 'Uku uku sun gamma galin', three three they finish the town, is a Hausa saying. I have found lumps of ferruginous sandstone, burnt to a wine-red colour on British sites of the Iron Age which may have been so used, but nothing to compare with the *murufu*. How did our Iron Age and Romano-British folk support their earthenware pots over the fire? In a railway cutting in Nupe several large pots were discovered, rather like large Bronze Age urns. They were inverted and entire, and contained no ashes or bones but only three iron arm-rings and a copper torc.

IRON-SMELTING. The smelting of iron results in cakes of slag like those found on British Iron Age sites, but about 18 inches in diameter. A burnt clay cylinder, about 2 feet in diameter, 2 inches thick and 4 feet high, with holes at the bottom, is filled with alternate layers of charcoal and ore. This is lighted up and kept going with bellows. When burnt through, more wood is thrown in at the top for a couple of days. The result is a puddle of impure iron and slag. The smith's anvil is like an enormous nail with a big head. His hammer is pear-shaped, the handle merely a lengthening of the thin end. The bellows are a pair of bags worked one by each hand, blowing through a clay nozzle. The axe used for tree-felling and rough shaping is of exactly the same shape as a celt, and is hafted in the same way. The adze, which forms almost the sole tool of the carpenter, is socketed, and set on a short hair-pin-bent handle.

The dug-out canoe is hollowed out largely by the use of fire. The charred wood is easily removed. Large trading canoes have the sides raised by boards, attached by scores of cleats of thin iron 3 to 5 inches long. *Kapok* is used to calk the seams.

There are many interesting industries in the Northern Provinces, but some are hardly relevant to our primitive comparisons. For instance, the Bida bead makers are famous. They grind, polish and drill cornelians, and produce necklaces exactly like those in the Egyptian rooms of the British Museum. I have seen them at work. The grinding and polishing is done by rubbing to-and-fro on large wet slabs of

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some special stone brought from Jebba. The drilling is done by tapping on a small drill, and it takes a day to perforate one bead.

At a village in Kontagora is a bed of soft shale which hardens on exposure to the air. Out of this shale the people cut arm-rings. The excision of the middle of the ring by a circle of x-shaped cuts produces a disc like the 'coal money' of the Purbeck hills. The use of lumps of quartz for roughening the surface of saddle-stones by hammering, results in the piece of quartz becoming round as a tennis ball and about that size. It then loses efficiency for chipping and is put aside as a missile.

H. S. W. EDWARDES.

ROCK ENGRAVINGS IN SCOTLAND (PLATE, p. 288)

The 'hind' reproduced in FIG. 1 is carved on a quite inconspicuous flat rock surface in Gleann Domhain, the wild ravine through which the Barbreck river flows down towards Loch Craignish, Argyll. Between the crags and the river on its northwest bank is a marshy terrace traversed by the footpath leading to the deserted croft of Lagolochan and Loch Avich. It is covered with moss and grass which can be seen encroaching on the flat carved surface in the photograph, so that the spot is extremely hard to find. I was informed of the carving by my colleague Dr Arthur Geddes, but should never have found it but for the guidance of Mr MacLulich, the former game-keeper at Barbreck House who also showed the hind to Dr Geddes.

Technically its sharply cut outlines at once differentiate the hind from the coarsely 'pocked' Bronze Age carvings so common in the county. Moreover the carving must be classed as naturalistic. The immediacy of the representation distinguishes it from more sophisticated works such as the famous boar at Dunadd; for the latter, though very lively, betrays the conscious stylization characteristic of the so-called Pictish symbol-stones. The Barbreck hind is in fact treated with the same directness as characterizes the art of Stone Age hunters, and in particular the 'Arctic' rock pictures of Norway and northern Sweden. Mr M. C. Burkitt confirms its similarity to the earlier Scandinavian group. It would be tempting to see in our hind a hint of the former presence in Scotland of hunters sharing artistic traditions with the Scandinavian artists of the later Stone Age. The 'elk' published by Mr Edwards from a cave at Wemyss, Fife (*Proc. Soc. Ant. Scot* (1932-3) LXVII, 173) provides a possible comparison, nearer in space if more remote technically and stylistically.

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The fish illustrated in FIG. 2 may also rank as naturalistic. It is engraved on the flat top of a projecting crag close beside the footpath from Roslin to Polton in the narrow gorge of the South Esk (Midlothian) some 20 feet above the river bed. The rocky promontory is nearly opposite the shallow rock shelter in the grounds of Hawthornden House, where Mr Taylor discovered a series of geometrical rock-scribings that were described in *Proc. Soc. Ant. Scot.* (1939-40), LXXIII, 316-8. The fish, however, is as different from these technically, as in subject matter; for the Hawthornden figures are mostly quite coarsely pocked. They are moreover situated on a relatively inaccessible ledge with sheer precipices above and below. The fish on the contrary lies close to a public path where the valley walls are more gently stepped. That is why the rock on which it is carved is disfigured by so many recent initials. The patina of the fish's outlines is, however, quite different from that of the initials and is indistinguishable from that of the rest of the rock. Otherwise there is no indication of the carving's age. Of course the gorge, still beautifully wooded, must always have been very difficult to traverse even on the less precipitous west bank.

The stylized animal shown in FIG. 3 is from a photograph kindly supplied by Mr J. S. Richardson, Inspector of Ancient Monuments for Scotland, and takes us back to Argyll, to Dunadd. It was discovered in the summer of 1929 by Mr Craw junior on a lichen-covered rock face that has been partially cleaned to expose the carving. This is situated on the precipitous face of the step of rock that rises vertically from the plateau fort or outer bailey to the ridge fort or citadel to the northwest. The particular ledge in question separates what were designated 'fort E' and 'fort C' in Dr Ross's plan published in *Proc. Soc. Ant. Scot.*, xxxix, fig. 20, p. 296 (reproduced, *ibid.*, LXIV, p. 114). It is thus a step up to the ridge on the top of which, further to the southwest (in 'fort B'), are carved the famous boar and the foot-mark. The animal is certainly stylized, so that its species cannot be determined with any confidence. Judged by the mannerisms of its treatment it might well be classed in the 'Pictish' group though it does not recur among the recognized symbols.

V. G. CHILDE.

Reviews

EXCAVATIONS AT HARAPPA : being an account of Archaeological Excavations carried out at Harappa between the years 1920-1 and 1933-4. By MADHU SARUP VATS. *Delhi* (Manager of Publications), 1940. *pp.* xv, 488, and 139 plates. £3 17s.

Historically Harappa was the first site of the Indus civilization to be known to science. The mounds were noted by Masson as early as 1822 and were studied by Cunningham in 1853. Seals from the ruins were published in 1875 and excavations were begun by Rai Bahadur Daya Ram Sahni in January 1921. (The 'prehistoric' remains at the more famous site of Mohenjo-daro in Sindh were first recognized below Buddhist ruins in 1922). From 1926 to 1934 the work was taken over by Mr Vats, on whom has fallen the arduous task of publishing the results, here admirably fulfilled. It should be insisted at the outset that the conditions of excavation at Harappa were far less favourable than at the now classic site in Sindh. The living and laboratory accommodation provided is far less commodious (I know this to my cost). The ruins have been far more grievously despoiled. Bricks, carted from the mounds with the aid of a light railway, provided ballast for a hundred miles of the Mooltan-Lahore railway. They have also provided materials for the construction of the modern village of five thousand souls that shelters among the mounds.

Owing largely to this vandalism most of the ancient buildings have been wrecked and the stratigraphy has been seriously disturbed, so that the indications of depths, carefully given in every instance, are significant in determining the relative age only of classes of objects numerous enough to be treated statistically. So not even Mr Vats' very precise observations suffice in themselves to settle the controversy provoked by that famous sandstone statuette (first published by Marshall and republished here), whose excellence is unparalleled till Hellenistic times. The comparatively frequent use of sun-dried bricks in combination with kiln-fired bricks, such as preponderate at Mohenjo-daro, has further militated against the survival of buildings. Accordingly the mounds of Harappa have not yet yielded the houses and shops with well-preserved stairs and fittings such as bring back so vividly the life of Mohenjo-daro four and a half millennia ago.

The largest structure exposed, a block 168 feet long by 135 feet wide, is plausibly explained as a granary. Like the inscriptions of Sumerian kings recording the erection of granaries, it emphasizes the importance of accumulated supplies of corn for such great urban agglomerations. Not very far away the

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excavator exposed an interesting group of fourteen houses, all built of mud brick on a monotonously uniform plan like the cottages run up by nineteenth century mining companies and factory owners for their employees. They seem indeed to be artisans' dwellings and so throw a welcome light on the housing of the lower classes in the third millennium. Each house-block is about 55 feet long and 23 feet wide with a cubicle in front beside the entrance, an open court in the middle and a single room 16 feet deep at the back. Yet in the courtyard of one of these tenements was found a hoard of superb gold ornaments, including inlays of remarkable technical refinement.

Indeed if the architectural remains from Harappa are uninspiring, the harvest of relics is very instructive. The pottery, seals, bronzes and other objects, from what the excavator terms the Late levels, for the most part duplicate these recovered at Mohenjo-daro, 450 odd miles away, and thus attest the extraordinary uniformity of the Indus civilization in its classical Harappa phase (to use Dr Mackay's terminology). Still, even here there are interesting local divergences. A vase in normal Harappa style and technique presents in addition to familiar motives an amusing group of human figures. The most popular toy vehicle of clay was not the long village cart so familiar in Sindh, but a light chariot which looks, as Mr Vats remarks, very like an inverted pack-saddle. There is also a fine bronze model of a covered car, unfortunately lacking wheels and here illustrated on too small a scale.

The puzzling thing at Harappa is that the relics from the lower levels are less, not more, like those from the southern sites. As the depth increases, 'tiny seals' predominate over the normal widespread forms. Though inscribed with the usual Indus characters, the tiny seals are really quite unlike anything common at Mohenjo-daro. The statistics here presented do not suffice to show whether there be any comparable divergence in pottery. The seals at least do not support anticipations of a widespread uniform culture undergoing local differentiation with the progress of time, but point if anything to a reverse process of assimilation.

Then Harappa has yielded remains of other cultures than that named after the site by Mackay. These are represented only by burials and stray pottery. To the Harappa culture itself are attributable the so-called 'post cremation burials' in urns. At one spot 54 such urns were found standing in a row 110 feet long, and 178 additional urns came to light in various parts of the ruins. Now of all these urns only one has ever yielded even the tiniest fragment of identifiably human bone! Their normal contents are small vases, figurines, toys, cakes, animal bones and ashes. So if the urns be funerary at all, the rite they attest has nothing whatsoever in common with that observed in Bronze Age urnfields in Europe.

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On the other hand the famous H cemetery, situated on comparatively low-lying ground at the southern foot of the great mounds, contains undoubted burials but not of the Harappa culture. Seals and similar articles are missing from these graves, and their funerary pottery is conspicuously different, technically and stylistically, from the standard Harappa wares. Sherds of this funerary pottery have indeed been found on the mounds too. But a statistical study of the stratigraphical position of these sherds shows that they must belong to late high levels. They and the burials in cemetery H presumably belong to a distinct culture whose authors occupied the site after its abandonment by the Harappa civilization proper. Nevertheless, though the art of the funerary pottery in its motives and composition is so strikingly different, survivals of the 'classical' tradition in technique, and to a small extent even in form, can be observed. Moreover the skulls from the lower H graves are said to agree with those from Harappa levels at Mohenjo-daro and Harappa itself. Only in an upper layer of interments could Dr Guha detect an 'admixture of a small low-headed race such as is seen among the present aboriginal population of India'. The lower layer in the cemetery comprises exclusively fractional interments accompanied by numerous vases. The fifty-seven graves in the upper layer consist of jars containing as a rule very incomplete skeletons without funerary furniture. The paintings on the jars and their covers—mostly peacocks and stars—agree fairly closely in subjects, style and technique with those decorating the varied assortment of forms accompanying the fractional burials in the lower level. Despite the anthropological divergence there can hardly be any great interval of time or tradition between the two sets of burials.

So the excavations at Harappa have raised fresh problems. There still remain large unexcavated areas which may provide clues to their solution. The reader gets the impression that in the light of experience gained the excavator might be still more successful in disentangling the fragmentary walls and planning the buildings. (Too much reliance has been placed, as at Mohenjo-daro, on arbitrary levels and too little on floors and streets). We may then hope that in time of peace operations will be resumed with fuller equipment.

In the meantime the historian of civilization is profoundly indebted to Mr Vats for his clear and scholarly report. The delay in its appearance cannot be regarded as at all excessive, especially when it be remembered that the author had to write his report in the intervals between his normal duties as Inspector and then as Deputy Director-General of Archaeology. His Department and the Government of India must be commended for producing the work so lavishly at so very modest a price. Of course I should have liked larger figures in many instances, but that would have raised the cost. The blocks, all made in India and including a coloured reproduction of a polychrome jar, show a high standard

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of workmanship. The reading is facilitated by good type and very helpful marginal headings. Appendices deal with technical subjects. Analyses of the bronzes by Dr Sana Ullah disclose in all samples both nickel and arsenic as impurities. He points out that precisely these elements occur in the Rajputana ores that may therefore very likely represent the source of the Indus copper. Mr Vats himself adds a note on relics from other prehistoric sites, including Rupar on the Sutlej, 200 miles east of Harappa. Though typical painted pottery and seals were not picked up at this remote spot, the relics figured can all be matched in the Harappa culture of which Rupar can thus be regarded as the furthest outpost.

V. GORDON CHILDE.

ANGLO-SAXON CHARTERS. *Edited by A. J. ROBERTSON. Cambridge University Press, 1939. pp. xxvii, 555. 25s.*

Miss Robertson explains in her preface that the present collection of texts, 135 in all, includes 'every kind of deed and record concerned with the transaction of legal business, apart from manumissions' preserved in Old English, with the exception of the documents printed in Miss Harmer's *Select English Historical Documents of the Ninth and Tenth Centuries* and Miss Whitelock's *Anglo-Saxon Wills*. The number of documents relating to the pre-Conquest period which can be used in editions conforming to the requirements of modern scholarship has thus materially increased. Nearly all the texts have been printed before, but of few can it be said that they have been previously edited. The footnotes to the texts reveal the care with which Miss Robertson has examined her manuscripts and she has provided translations and about 250 pages of valuable notes. It may certainly be said that, thanks chiefly to her, Miss Harmer and Miss Whitelock, the re-editing of historical documents in Old English is advancing with rapidity, and Professor Hazeltine observes that 'the present seems the appropriate time in which to begin the preparation of a new *Codex Diplomaticus* of all the charters and other documents in Latin'. The editor is here, however, confronted with a difficult problem, whether new work should be on the lines of Kemble and Birch, or should take in the first instance the form of adequate editions of certain ancient cartularies, in particular Hemming's Cartulary, the Textus Roffensis and the Codex Wintoniensis. Many of the documents in Miss Robertson's own volume are preserved in cartularies, and the proportion of documents derived from cartularies would be higher in the case of the Latin documents. A cartulary such as Hemming's has an intrinsic interest and value and something is lost if it is not treated as an organic whole.

Of the *corpus* of pre-Conquest 'charters' those in Old English form a comparatively small proportion. The period in which the vernacular was first

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used for drafting royal and private charters is a matter of some interest. The earliest royal diploma in Miss Harmer's *English Historical Documents* is that of Berhtwulf of Mercia, c. 845. Miss Robertson's collection includes two Mercian documents relating to the eighth century, but the first, a diploma of king Ethelbald belonging to 743-5, seems to be a late ninth century translation of a lost Latin charter, and the second is apparently a translation (probably also of the late ninth century) of the surviving Latin summary of a charter of king Offa. Excluding the late paraphrase of one of king Ethelwulf's diplomas (no. viii) and the brief summary by a contemporary on the back of a charter of king Ethelbert (no. x), the grant of privileges by the latter king (860-66) to Sherborne (no. xi) is the earliest royal diploma issued in Old English in this collection, and there is no other example from the ninth century, unless the origin of king Ethelred's grant to the ealdorman Aelfstan (no. xii, c. 870) preserved in a Middle English version is a lost vernacular charter and not the Latin document which has survived. The royal diploma issued in the vernacular only was a rarity not only in the ninth century but also in the tenth and eleventh centuries. Some of the surviving examples are undoubtedly genuine, but others are spurious or open to suspicion. One, a grant of king Edgar to Sherborne (no. l), was presumably issued in circumstances which precluded the drafting of a more elaborate instrument—'I, king Edgar, declare in this book, which is a gospel book, that I have granted, etc.' From the early ninth century, testamentary dispositions were drawn up in the vernacular: Miss Robertson prints the earliest known documents of this type (lacking however 'the characteristic features of the Anglo-Saxon will' and therefore excluded from Miss Whitelock's volume), belonging to the first decade of the century. Memoranda concerning litigation, some of the most interesting documents in Miss Robertson's collection, likewise go back to the first half of the ninth century (nos. iv and v, Mercian). Unlike royal diplomas, 'private charters' (applying this term to grants, leases, agreements and exchanges) were frequently written in English. Miss Harmer edited the earliest grant, that of the ealdorman Oswulf issued at the opening of the ninth century. Leases begin in the third quarter of the ninth century and are more numerous in the tenth, documents of this class forming a large proportion of Miss Robertson's texts. It seems to have been a matter of indifference whether leases were drawn up in Latin or Anglo-Saxon, though those in the former language are more numerous. Of rather more general interest are the surveys, few in number but very precious, the list of estates liable for work on Rochester bridge (no. lxi, of uncertain date) and the 'list of contributions of men required for manning a ship, c. 1000' (no. lxxii). In the small group of post-Conquest texts in the volume the editor has included an interesting but little known record of the dues rendered to the church at Lambourn in the late eleventh

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century (and probably much earlier); the student would welcome the discovery of more documents of this type.

It is a pleasure to find in this volume critical editions of the *Burghal Hidage* and the *Northamptonshire Geld Roll*, which have long been needed. With her text of *Burghal Hidage*, based on Laurence Nowell's transcript of the early eleventh century manuscript destroyed by fire, Miss Robertson prints the 'specifications regarding the maintenance and defence of fortifications' which occur only in that transcript and have so far been printed only in the *Dissertatio Epistolaris* of Hickes. These specifications seem to explain upon what principle round numbers of hides were allocated to the maintenance of the boroughs. 'For the maintenance and defence of an acre's breadth [i.e. 4 rods] of wall 16 hides are required. If every hide is represented by 1 man then every pole of wall can be manned by 4 men', and 160 hides are required to maintain one furlong of wall. It is shown in the notes that in some instances there is a close correspondence between the length of wall implied on this basis by the figures of the *Burghal Hidage* and the actual measurements where they can be ascertained with reasonable probability, as at Winchester, Wareham, Bath and Wallingford. The practice of discussing the document without reference to these 'specifications' has tended somewhat to obscure the significance of the arrangement for military purposes. Professor Tait's *Medieval English Borough*, containing a valuable discussion of the date of the document and a note that *Sceafstesige* 'has been located by Professor Stenton as an island in the Thames near Marlow' (pp. 15-18), probably appeared too late for any reference to be made to it in Miss Robertson's notes. Of the *Northamptonshire Geld Roll* she provides an accurate rendering which corrects the figures given by Round, who misunderstood the use of *healf* (in such phrases as *viii healf hide*, meaning seven and a half hides) in the entries relating to the hundreds of Upton Green, *Navereshund*, *Stotfalde*, Stoke and Corby. Not all the disparities between the items and the totals are removed by this revision, but the details for *Stotfalde* and Corby hundreds are now seen to be correct. Round assigned a roll to a date in or before 1075 because he identified 'the Lady' with queen Edith. Miss Robertson suggests that by 'the Lady' and 'the king's wife' the writer means queen Matilda, but there is no proof that the Conqueror's wife held queen Edith's manor in Corby hundred. The date of the roll is not much affected by this identification, for Osmund 'the king's writer' is almost certainly Osmund the chancellor and the roll cannot be later than 1078—after that date he would be described as 'bishop', even if he remained chancellor after his appointment to Salisbury.

The dating of the documents in this volume is often a matter of considerable difficulty, and it is clear that the editor has spent much time collecting all

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references to persons who occur in them. Occasionally it is necessary to make a careful study of all the notes to a charter in order to discover its probable date, and it may be urged that for the convenience of readers a date, tentative or certain, might have been attached to the brief heading which the editor devises for each document. The proportion of documents regarded as definitely spurious is very small, for the editor is reluctant to reject even a suspicious document if there is any good reason to suppose that it is a highly corrupt version of a genuine charter. Though in the past the authenticity of Latin and vernacular texts has often been too readily assumed, Miss Robertson's approach to the problem is undoubtedly the right one, and her remark that certain charters attributed to Cnut have been regarded with undue suspicion (p. 406) is justified. This edition has clearly taken many years to prepare, and it remains only to place on record our sense of gratitude to Miss Robertson for a book which will form an indispensable part of the historian's equipment. R. R. DARLINGTON.

FRUHBRONZEZEITLICHE KULTUREN IN UNGARN. By PAL VON PATAY. (Dissertationes Pannonicae ex Instituto numismatico et archaeologico Universitatis de Petro Pázmány nominatae Budapestinensis provenientes, 2nd ser. no. 13). *Buda Pest*, 1938. pp. 118, 13 plates and 14 maps. 30 pengő.

Even more than Ireland, Hungary has been a collectors' paradise; thence handsome bronzes and ornate pottery have been traded widely by dealers till they are scattered about in museums all over the world. So the Hungarian Bronze Age is familiar to every antiquary. But scientifically the period is even less well known in Hungary than in Ireland. A number of hoards have indeed been published and serve as a basis for typological division. But the very attractive and embarrassingly plentiful pottery is even harder than the Irish to fit into the chronological scheme thus provided. For before 1928 hardly any closed grave-groups had been published. Masses of sepulchral pottery and metal grave-goods were illustrated and exhibited as coming from cemeteries. These may of course have been used for many centuries, but most had been simply plundered, and even in the case of those excavated by local museums the grave-groups had been broken up. When Dr Banner of Szeged broke with this antiquated tradition and issued an analytical publication of the cemeteries on the lower Tisza and Maros, he could show that the graves covered several typological periods, and was able to allot the funerary pottery of the area between these. Along the Tisza too stratified settlements had been scientifically explored by Marton and Roska and had thus established a ceramic sequence. In 1928 I outlined a chronological scheme based on the four major cultural phases

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recognizable at Tószeg, lettered from the bottom up, and this was adopted but modified and improved by Dr Tompa in 1935.

The Tószeg sequence provided the chronological framework for the present study too, which really diverges from my scheme only verbally: von Patay, like Tompa, equates the Perjámos culture of the lower Tisza with that represented in Tószeg B on the upper Tisza, while I have taken Perjámos as representing a distinct culture parallel and akin to that represented in Tószeg A and B. He agrees with me that both are parallel to the classical Aunjetitz culture of Czechoslovakia and admits that on the lower Tisza no sharp distinction can be drawn between the finds of the Nagyrév (Tószeg A) and Perjámos phases. His lists show too that the Nagyrév and Tószeg B cultures on the upper Tisza are known exclusively from domestic sites, while on the Lower Tisza remains of the Perjámos culture are obtained from graves too. So even on the lower Tisza the Tószeg sequence can be applied only with modifications.

In the rest of Hungary it is more difficult, for the area was no cultural unit during the Bronze Age. In the central plain and west of the Danube it is still necessary both to establish the cultural sequence and to define the boundaries of the several cultures with the aid of accurate cartography. By plotting on ten maps the distribution of cultures assigned by him to the phases of Tószeg A and B and of the four Copper Age cultures that precede, von Patay has made a modest beginning in this indispensable task. The maps would be more convincing if individual traits—the several types of cinerary urn or pin—had been separately plotted instead of cultures defined principally by pooled ceramic types. As they are, the inclusion of isolated vases distinctive of one culture that turn up, perhaps as imports, in settlements or cemeteries belonging to another, is liable to confuse our impression of the boundaries between the several provinces.

Nevertheless the maps can be used to check the chronology advocated by von Patay and help us to understand the origins of the Bronze Age groups too. Exclusive distributions suggest graphically the contemporaneity of the groups named after Perjámos, Nagyrév, Kisapostag, Gáta and Magyarvarad (my Veselé type). The roots of these in the appropriate Copper Age cultures (Baden, Bell-beaker, Bodrogkeresztur and Vučedol) are well brought out. Our author, however, would place also the urnfield cultures, characterized by 'Pannonian wares', in the period of Tószeg B and parallel to Perjámos. But his maps show an overlap of the North Pannonian variety into the provinces occupied during this phase by Gáta and Magyarvarad, while the stray finds along the Tisza are frankly derived from settlements and cemeteries of Tószeg C age. The argument for the earlier dating of this fabric is as follows: 'We know from this site a little cup that agrees accurately with the Moravian Aunjetitz

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type. A small jug recalling the Theiss type (of Perjámos) also came to light at the site. We can thus establish the contemporaneity of this culture with Aunjetitz and Perjámos'. But the site in question, Zsitvatö, is at best an urnfield (marked with a query in the author's list) from which a number of vases were collected last century. It cannot be admitted as a closed find proving the contemporaneity of anything.

Similarly the parallelism between the Vátya group of Pannonian urnfields and Perjámos or Tószeg B is deduced from early-looking bronzes and vases found in huge urnfields, one of which at Vátya comprised 364 graves and yielded also typical Tószeg C vases. The case for transferring the urnfield cultures from phase C to phase B is thus in all instances very weak.

The actual discussion of these urnfield cultures is none the less of great value. A link with earlier phases of local development in western Hungary is presumably afforded by the new Kisapostag group, here defined by the author, but pending the publication, promised in *Archaeologia Hungarica*, of the eponymous cemetery the group remains a little nebulous and the possibility remains that, as the original excavator thought, it should be put later. It is characterized in any case by cremation, and still earlier this rite was allegedly practised by the Bell-beaker folk round Buda Pest and some of the Baden people in the Copper Age. In the ceramic decoration the persistence of the traditions of Vučedol is obvious, but unfortunately the Vučedol culture itself cannot yet be elucidated by adequate material derived from systematic excavations, but is represented by stray sherds and stone implements. Von Patay has further been able to recognize in the pottery the influence of the Sudetic Tumulus Culture. But judging by the burial with a rapier at Vattina (not mentioned here) this influence must be due to an infusion of inhumationists from the north and was not decisive in the rise of the urnfield cultures.

These von Patay still presents as essentially autochthonous developments of Copper Age traditions. Their relation to the Lausitz culture of Poland and Germany and its provincial outposts in Bohemia and western Germany in not discussed. But some relation seems probable since, despite the contrast in the pottery, the funerary ritual agrees right down to the perforation of the urns' walls with 'ghost holes' in the Vátya group. On the other hand the pot-forms from the Vátya urnfields (like some from the inhumation graves of the Vattina culture to the east) really recall Aegean Minyan ware, and at Troy Minyan ware was found in an urnfield. These problems cannot be solved by abstract typological studies, but only by accurate plotting of distinctive types, analyses based on well-authenticated closed finds and scientific excavation and publication. Yet with their solution are bound up questions relating to the Illyrians, the Thracians, the Phrygians, the Hittites and even the Greeks!

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The book under review is to be welcomed as a preparatory step to the clarification of these problems. But without more closed finds and a keener appreciation of their value, the data for such a study are inadequate to provide anything like rigorous proof. I hope foreign authorities will not accept all the author's conclusions without criticism nor reproduce them again and again as 'von Patay has shown that . . .' We welcome too the enterprise of the Editor, Prof. Alföldi, in opening the pages of *Dissertationes Pannonicae*, hitherto devoted to Roman archaeology, to be vehicles for the publication of some of Hungary's stupendous wealth in prehistoric material. V. GORDON CHILDE.

CORPUS VASORUM ANTIQUORUM: U.S.A., Fascicule 7. The Robinson Collection, Baltimore, Md. By D. M. ROBINSON. *Harvard University Press*; London: *Oxford University Press*, 1938. pp. 62 and 44 plates. 22s 6d.

This is a most valuable collection of plates of vases and fragments, most of which have not previously been published. The plates are beautifully reproduced, and there is a full description of each piece with information about technique, and wherever possible parallels are given for comparison.

The majority of the vases are of the later fifth and fourth century, but there is one remarkable Black Figure by the Theseus painter; this has the unusual subject of a potter making a kiln, with a herm at his side. It is important as one of the earliest proofs of the existence of herms. Another uncommon Black Figure vase is of interest more for its shape than its decoration, being a spherical jug with a sieve in the bottom; no really satisfactory explanation of its purpose has been suggested.

Among the Attic Red Figure ware is a fine maenad kylix signed by the potter Hieron and painted by Makron; the drawing is free and spirited. The Pig painter is represented by a large column crater in excellent preservation, depicting a lively scene of youths and hetairai, though the subsidiary ornaments are of poor quality. There are some new toy oinochoes, of the type used by little boys at the spring Feast of the Jugs, and a hydria by the Meidias painter reminiscent of the British Museum hydria in its treatment of figures at varying levels, but with a more elaborate floral design which is unique. Of rather similar style is a hydria from the workshop of the Hippolytus painter, depicting a domestic scene of women at their toilet, while perhaps the most interesting of all is a large late Attic pelike of the so-called Kertch style by the Griffin painter, representing a fight between Amazons and Griffins. One of the Amazons rides a beautiful white horse, though the white paint which one would have expected to find on their faces is lacking.

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There are several Apulian red-figure vases, including examples by the new Hoppin painter created by Trendall, and the Tarporley painter. So far as can be judged from the reproductions, the workmanship is of no particular merit.

The collection includes a number of Campanian red-figure amphorae typical of the end of the fourth century, and three attractive Fish plates from Capua. One of them is by the Torpedo painter, and in each case Mr Robinson has not omitted to give us the species of the fish depicted. A curious three-bodied Lucanian vase suggestive of a cruet, and crudely decorated with birds and human heads, has a special painter, 'The Birder', invented for it by Trendall. Lastly there is a page of later Roman and Apulian rhytons and vases made in the shapes of animals and birds; one of them, a duck vase, comes from Benghazi—not its only link with the present, as one recognizes the same spirit in some of the articles displayed in our multiple stores today. E. SCOTT.

EXCAVATIONS AT OLYNTHUS. Part IX: The Chalcidic Mint and the Excavation Coins found in 1928–1934. By D. M. ROBINSON and P. A. CLEMENT. *Baltimore, The Johns Hopkins Press; London: Oxford University Press, 1938. pp. xxxi, 413, 36 plates. £3 7s 6d.*

This volume falls into two distinct parts, the first dealing with all the coins from the Chalcidic mint at Olynthus, and the second with the coins found actually on the site at Olynthus during the excavations undertaken in the years 1928–34.

The first 86 pages consist of a very full catalogue which describes in detail all the known gold and silver coins, from all parts of the world, issued by the Chalcidic mint at Olynthus. These are all of one type, showing a laureate head of Apollo on the obverse and a cithara on the reverse, and many of them are in an excellent state of preservation. From the similarity between them all and the close continuity of style Mr Robinson infers that the coinage was all issued from one single mint and not, as was previously supposed, from a group of confederate mints. He is able to establish the relative chronology of the coins by die couplings, style, fabric, and degrees of attrition of coins found in hoards; he finds four different types of punch die, the first confined to issues of tetrobols and hemiobols, which confirms the accepted theory that tetradrachms, were only minted at a later date. In many cases the dates can be fixed accurately by the symbols of different magistrates and engravers.

The numismatic evidence confirms that an independent Chalcidic state was in existence from 432 to 348 B.C. and all the coins were produced during that period. The varying prosperity of the state is clearly reflected in the issues of coins, and it appears that at times of crisis such as the early blockade of Potidaea, when the Chalcidians were badly in need of money, a great number of coins

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of low denominations were minted. After the peace of Nicias the growing prestige of the State and its increased commercial activity were shown by the change of the coin unit from the tetrobol to the tetradrachm, while the fact that the coins were used as models for the Macedonian royal mint indicates free circulation abroad. The mint continued increasingly active till the defeat of the Chalcidians by the Spartans in 379. After this the rate of production settled down to a much slower pace, increasing during the brief alliance with Philip, but sinking during the growing opposition to him, until in 348 he finally overcame and dissolved the State.

The second part of the book contains a catalogue of the coins found on the sites at Olynthus and Meciycerna in 1934, followed by a commentary which embraces also the coins of the 1928 and 1931 excavations, and assigns revised dates to some of them.

There are nearly 4000 coins, many of them badly worn, coming from a wide range of places, including Attica and Persia; the majority however are from Macedonia and Thrace. The dates vary considerably, but 98 per cent. can be fixed at dates earlier than 348, while the others, which were all found in the north-west corner of the site, are almost all of the reign of Cassander. This points to the few remaining inhabitants having been displaced in 316 by the foundation of the new town of Cassandreaia on the site of Potidaea.

The plates are clearly and admirably produced and do full justice to the beauty and fine workmanship of some of the Chalcidic tetradrachms.

E. SCOTT.

DIE STADTMAUER VON IZNIK (NICAEA). By A. F. SCHNEIDER and W. KARNAPP. *Berlin*, 1938. pp. 55, 52 plates, 22 figures in text. RM30.

The archaeological examination of the walls and monuments of Iznik undertaken by the Istanbul section of the German Archaeological Institute was begun in 1930 and continued at intervals until 1935. This volume (No. 9 of *Istanbuler Forschungen*) contains the report on the walls; that on the other remains, including the Islamic, awaits publication.

After a historical introduction and a short survey of records referring to the walls, left by travellers, beginning with Busbek and Dernschwam (1553-1555) a general description (by W. Karnapp) of style and technique of the building follows. Three main building periods are identified, and their characteristics noted (pp. 9-19). Next (pp. 19-36), gateways, towers and sections of the wall are treated in detail. The question of dating follows (pp. 36-43) and the conclusion is reached that the earliest remains are Hadrianic; that the first building period is Late-Antique, not Byzantine, as has been hitherto supposed; that the second building period began after the earthquake of 368, and repairs and

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additions continued to be made at intervals until 1204, when restoration on a large scale and the construction of a second wall, 13-16 m. in front of the main wall, and 3-4 m. high, was undertaken by the Lascarid Emperor, Theodore I. This is the third building period. The later history of the walls of Nicaea, which was finally lost to the Byzantines in 1330, is not included. A final chapter (pp. 43-53) contains a study of the pre-Islamic epigraphic material.

It is fortunate indeed that a careful study of these fine architectural relics has now been made and published, since the normal rate of their disintegration by nature is, we are told (p. 8), being quickened by the destructiveness of man.

Plans, drawings and photographs are on a most generous scale and of a very high standard. In the review copy, pl. 45 (referred to on p. 14) has somehow been omitted. On p. 21, line 2, for 'Tafel 7', read 'Tafel 8'. A few of the Greek accents are misprinted.

W. A. HEURTLEY.

BYZANTINE ART IN ROUMANIA. By MARCU BEZA. *Batsford*, 1940.
pp. xxi and 106, with 93 illustrations. 21s.

Mr Marcu Beza was for some years at Jerusalem as Consul-General of Roumania and he has visited many of the less familiar monasteries in the Near East. In the course of his travels he has collected photographs and paintings of a number of ecclesiastical objects which have been presented at various times to churches and monasteries by Moldo-Wallachian notables. His collection of photographs and paintings is published in this volume with an introduction and a jejune list, from which one gathers that the author was mainly interested in the objects not as works of art but as evidence of the wealth and piety of his fellow countrymen. The objects include altar-crosses in metal and wood, liturgical fans, reliquaries and caskets, book covers, icons, embroideries and illuminations; they date mostly from the 16th, 17th and 18th centuries. The title of the book, as the author hints in a disarming preface, is a misnomer—many of the objects are not Byzantine in style, none of them is now in Roumania and, with one or two exceptions, there is nothing to show that they were the work of Roumanian artists.

Sixty-eight photographs are reproduced and twenty-three paintings in colour, the latter including a portrait of the Archimandrite Kiriacos, Keeper of the Treasury in the Holy Sepulchre, and a view of the Vlasiu monastery on Mount Pindus. The photographs are good and have been well reproduced, but the paintings are not pleasing, but whether this is due to the character of the originals or the printing we cannot say.

J. W. CROWFOOT.

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The Sources of Geoffrey of Monmouth

II. The Stonehenge Story

by STUART PIGGOTT

IN a previous paper in *ANTIQUITY* (September 1941) I indicated briefly the complexity of the interpretation of the jumbled myth, legend and fantasy contained in the *Historia Regum Britanniae*, and discussed the sources which seem likely to have been used by its unscrupulous author for those parts of the work which purport to deal with the pre-Roman ages of Britain. These sources appear in the main to have been a version of the *Historia Britonum* of Nennius and a collection of pedigrees of ruling houses of the Welsh Dark Ages; a variety of other classical and Celtic material was laid under contribution for embellishments, but there was certainly nothing that could be connected, even indirectly, with any source earlier than that of the classical writers' accounts of the Roman conquest and occupation of Britain. Geoffrey's prehistory is in fact completely bogus, and while it may sometimes incorporate interesting fragments of early medieval history or legend, it bears no relation whatsoever to the period it professes to chronicle.

On the other hand, in that part of the *Historia* allegedly treating post-Roman history, Geoffrey relates at some length a story dealing with the building of no less a prehistoric monument than Stonehenge itself. Now this story is on the face of it probably more fantastic than any other in the whole of his extensive series of legends: it is a tale of sheer magic, with so little apparent connexion with any possible events that it was for generations dismissed either as one of the flights of

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Geoffrey's fancy or as a folk-tale from a Celtic fairy-land. To the rationalist antiquaries of the nineteenth century the story of the bodily transportation under Merlin's direction of a great stone circle from the remote west to Salisbury Plain, could obviously be brushed aside with an Olympian assurance, and it was left, paradoxically, for the precise and exact determinations of science in our own day to announce, through the late Dr H. H. Thomas, that a large proportion of the Stonehenge stones had indeed been brought, if not from Ireland as Geoffrey's legend relates, at least from a hardly less surprising and remote district: West Wales. Furthermore there is evidence of their having formed part of a structure earlier than that in which they now find a place and perhaps before their transportation to the site of Stonehenge—they may represent in fact not merely the natural products of a distant quarry but the transportation and re-adaptation of a Welsh stone circle to a Wiltshire site.

Now this correspondence between legend and fact is so remarkable that it can hardly be dismissed as mere coincidence. On the other hand, the assumption that there is a link between an event which took place between 2000 and 1500 B.C., and a legend first making its written appearance in A.D. 1136, obviously presents remarkable difficulties, and the lines of approach which I put forward must be regarded only as the most tentative and hypothetical outlines which the literary and the archaeological evidence, taken in conjunction, suggest.

We may now turn to a fuller consideration of the facts available—on the literary side the details of Geoffrey's story, and on the archaeological, of the 'foreign stone' element in Stonehenge. The story as given in the *Historia* (Bk. VIII, 9-12), runs as follows. The Dark Ages ruler, Aurelius Ambrosius, wishing to erect a monument to commemorate those massacred by Hengist near Ambresbury, is advised to consult Vortigern's prophet, Merlin, who is to be found at the Fountain of the Galabes in the country of the Gewissae. Merlin advises him to send for the *chorea gigantum que est in killarao monte hybernie*, the stones of which had been brought from Africa and possessed magical healing powers. Ambrosius therefore makes a warlike expedition to Ireland, where he conquers the king Gillomanius and acquires the stones, which are then brought by Merlin's magic arts on to the ships, and thence transported to Salisbury Plain, where they are set up.

The archaeological position with regard to the 'foreign stones' at Stonehenge is briefly as follows. After various guesses as to their origin, some fairly near the truth, this was definitely established by Dr

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H. H. Thomas in 1923.¹ From petrological examination by microscopic sections he found that the only place where the stones were matched as a group was the Carn Meini region of the Presely Range in Pembrokeshire, where the various rhyolites and the unique spotted dolerite occur. The 'Altar Stone' was found to be a sandstone either from the Cosheston beds near Milford Haven or the Senni beds of south Carmarthen and Brecknock. Subsequent research has shown that the Presely stones were also used to make axe-hammers of 'Beaker' type which are found at widely scattered sites in Wales, and two polished axes have actually been identified as imports in northern Ireland.² This exploitation of igneous rocks for axes is of course a part of the widespread system of manufacture and trade in these commodities which petrological research is now beginning to establish on a firm footing,³ and though in some measure it brings the Stonehenge episode into connexion with the general movements of trade of the period, this in no way minimizes the fantastic nature of the actual event. Mr W. F. Grimes, in a notable topographical study of the Welsh terrain,⁴ comes to the conclusion that the most probable method of transport would be 'a land route [from Carn Meini] to a suitable point of embarkation' in the Haverfordwest region, thence to Wiltshire by sea—either across the Bristol Channel to the Mendips and through the Frome Gap in the forest belt on to the chalk, or by sea round Land's End and thence up the Avon.

It will be seen that the correspondence between the two elements, the legendary and the archaeological, are sufficiently curious to be worth further discussion; we have to consider the various means by which such a legend, ultimately based on the facts, could have found its way into Geoffrey's text. If we assume it to have been completely invented by him, we are of course thrown back on the pure coincidence theory, which I do not think tenable in the face of such exact and improbable similarities. But it might be argued that, as so often the case with an apparent 'folk-memory', we are merely dealing with an aetiological myth, either invented by Geoffrey or taken by him from popular talk, to explain the presence on Salisbury Plain of a monument

¹ *Antiquaries Journ.*, 1923, III, 239-60.

² *ANTIQUITY*, 1936, x, 220-1, with references.

³ cf. the First Report of a Committee of the Southwestern Museums on this problem in *Proc. Prehist. Soc.* 1941, VII.

⁴ *Map of South Wales showing the distribution of Long Barrows and Megaliths*, pp. 7-9 of introduction. (Ordnance Survey, 1936).

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constructed of stones which appeared to be derived from a remote source. This, while possible, is not I think convincing. Twelfth-century science was hardly sufficiently advanced to question the presence of spotted dolerites in a cretaceous landscape, and while Wiltshiremen would know sarsens for the local rocks they were, the only popular theory to account for their origin by visitors seems to have been, that they were artificially made from a sort of Druidic cement.⁵ While the building itself might well be regarded as the work of giants or of wizardry, it would be unnecessary to invoke the transportation of its stones from afar—stones were just stones and might occur anywhere, and only their arrangement in an architectural manner as at Stonehenge would call for comment. In parenthesis I think it not unlikely that the absence of any early medieval records of other stone circles, including Avebury, is due to the fact that they were regarded as natural objects of the countryside, in which by a whim of the Creator the stones stood on end and in some sort of order.

Unless then we have in Geoffrey's story an aetiological myth which (again by coincidence) hit on very nearly the true facts, we must examine other possible sources. Discursive reading and a retentive memory resulted in his filling his narrative with a mass of stories, allusions and reminiscences from the most diverse sources, some of which have been pointed out but many await identification. His secular reading included, as well as Nennius and Gildas, not only Livy, Virgil, Ovid and some minor Latin poets, but Apuleius; he was familiar with geographers such as Solinus, Pomponius Mela and Strabo, and used the *Origines* of Isidore of Seville and probably Bede's *De Natura Rerum* as well as his *Historia Ecclesiae*, and the Jerome-Eusebius chronicle.⁶ But from none of these sources could he have obtained a Stonehenge legend, nor one which would suggest itself for adaptation in the way for instance in which he transferred Mela's nine virgins of the Isle of Sein to Avallon in his *Vita Merlini*.⁷ It is of course far more difficult to assess his debt to the popular stories which were the common property of the courts of medieval Europe and are exemplified by the collection in the *Gesta Romanorum*, or the French romances. In these stories Oriental and other exotic influences are often clearly present, and that Geoffrey's store of legendary matter was not confined to

⁵ e.g. John Aubrey, *Remains of Gentilisme* (Folk-lore Society, 1881), 273.

⁶ J. J. Parry, *The Vita Merlini* (Univ. of Illinois Studies in Language and Literature), 20.

⁷ *Chorog*, III, 6, 48; *Vita Merlini*, ll. 908 ff.

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classical and the debated Celtic sources later to be mentioned is shown for instance by his knowledge of the story of Wayland.⁸

It is the Celtic sources to which we may turn with most hope. In my previous paper I summarized the arguments which have rendered baseless Geoffrey's claim to have translated (however freely) from the Welsh a book of Celtic history, but at the same time I endeavoured to show that he most probably used a book of early Welsh pedigrees for the construction of part of the *Historia*; other than this it is difficult to trace any evidence of his direct use of Old Welsh manuscript sources. But far more difficult is to confirm or refute the indirect use he may have made of oral tradition or Welsh legends read and half forgotten. On this, the opinion of the scholars has been divided, but Prof. J. J. Parry has I think brought forward convincing evidence of Geoffrey's use, at all events in the *Vita Merlini*, of genuine sources in Welsh tradition and literature,⁹ and the strong probability of an oral Welsh basis for the Prophecies of Merlin was well demonstrated by the late Enid Griffiths.¹⁰ Such use is, on the face of it, probable, but it is in its very nature difficult to analyse or to produce evidence amounting to exact proof, since much depends on stylistic criteria. And it is precisely on these equivocal and unsatisfactory grounds of style that I would suggest that the Stonehenge legend as recorded by Geoffrey bears a distinct affinity to Welsh tradition, and in particular to one story to which attention in this connexion was first directed, I believe, by Prof. O. T. Jones of Cambridge.¹¹

One of the four tales which form the early nucleus of the medieval Welsh collection known, since Lady Charlotte Guest's translation, as the Mabinogion, is the story of Branwen, daughter of Llyr, in which there occurs the following episode. Bran the Blessed, having led an expedition to Ireland to avenge the wrongs done to his sister Branwen,

⁸ *Vita Merlini*, ll. 235-6 . . . *aurum gemmasque micantes, pocula que sculpsit guielandus in urbe sigeni*. Geoffrey's reference to Wayland as a worker in precious metals (cf. King Alfred's *hwæter sint nu thaes wisan welandes ban, thaes goldesmithes the waes geo maerost*—*Boethius De Consol. Philos.* II, vii) suggests a knowledge of the original Norse legend, in which Wayland makes silver-mounted cups from the skulls of Niduth's children, rather than the French romances, where 'Galland' is invariably a magic swordsmith. It was in this latter capacity of course that he gave his name to the famous chambered tomb in Berkshire. (Depping & Michel, *Wayland Smith* (1847); Grinsell in *Trans. Newbury F.C.*, 1939, VIII, 136-9).

⁹ *op. cit.* esp. 15-20; 127 ff.; *Philolog. Quarterly* (Iowa), 1925, IV, 193-207.

¹⁰ *Early Vaticination in Welsh* (Cardiff, 1937).

¹¹ In conversation with my friend Mr Peter Fitzgerald Moore.

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who is married to the Irish king Matholwch, is there wounded in battle and instructs his seven followers to cut off his head and take it to the White Hill in London by a specified route. These instructions for decapitation are carried out, and they then proceed with the head by way of Anglesey, where Branwen, who accompanied them, dies and is buried in the famous 'four-square grave on the banks of the Alaw'. Thence, following Bran's instructions, they journey with the head to Harlech, where they hear news that Catuvellaunus is crowned king of England in London, and stay in Harlech seven years at an enchanted feast. At the end of this time they go to Gwales in Pembrokeshire, to a great hall overlooking the sea and with one door towards Cornwall and Aber Henfelen. There they remain eighty years, until they open the door towards the east and carry the head on the last stage of its journey to London, where it is buried 'with the face towards France' to ward off foreign invasion.¹²

It will be seen that the story of the transportation of that precious relic and palladium, the head of Bran Fendigaid, from Ireland to England bears a singular resemblance to our legend of Stonehenge. In both there is the initial expedition to Ireland, and a battle which results in the acquisition of a venerated object, in both the transportation to a southern English destination and its deposition there as a rallying-point of magic or funerary significance. In the story of Bran the stages of the journey are given in interesting detail; the last halting-place of the land journey through Wales is significantly described as looking across the Bristol Channel, and the next stage finds the head already in England—a sea-journey is the inevitable link, and the transport of the Presely stones comes immediately to the mind. If we have not once again found an accidental coincidence (and the coincidence of coincidences becomes in itself rather improbable) we seem to have some linking up of three things—the facts of the transportation of the Presely stones to Wiltshire, the Dark Ages tale of a magic talisman brought from Ireland through Pembrokeshire to southern England, and the story of the magic building of Stonehenge as recorded in the least reliable and most suspect chronicler of the Middle Ages. What attitude are we to adopt towards this awkward triad?

The resemblances between Geoffrey's story and that of Bran surely point to the possibility of his having derived the legend from a Celtic source, either from a manuscript, or, more likely, from an oral tradition in Wales. It does not seem likely that he adapted the actual

¹² *Mabinogion*, *Everyman's Library*, no. 97, pp. 33-48.

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tale of Bran to fit Stonehenge, but both may derive from a common source. Bran's head might even be Stonehenge, and Geoffrey's version preserve a less corrupted story than that in the Mabinogion, or both may be distorted legends of the traffic along those ancient trade routes between Wessex, Wales and Ireland in which the Stonehenge episode takes so spectacular a place.

There is I think some collateral evidence from the *Historia* to suggest that Geoffrey had some knowledge of the Bran or allied legends, in connexion with his stories of Vortigern and of Vortimer. The first, and no more than a possible connexion, relates to the former, whose death, as told by Geoffrey, was by burning in a tower, as prophesied by Merlin (*set prius te infra turrin inclusum comburent*, Bk. VIII, 1). This suggests a possible comparison with the story of the burning of Llassar Llaesgyfnewid and his wife in the Iron House as told by Bran to Matholwch, but I do not insist on a parallel which may be fortuitous. The second point deals with Vortimer, who in the *Historia* commands, on his deathbed, that his body should be placed in a great bronze monument at the port where the Saxons had landed, so that the sight of his tomb would drive the invaders back to their homeland—

Iussit pyramidem fieri sibi aerseam locarique in portu quo saxones applicare solebant. Corpus uero suum postquam defunctum foret sepeliri desuper ut uiso busto barbari retortis uelis in germaniam redirent. Dicebat enim neminem illorum audere propius accedere si etiam bustum ipsius aspicerent (Bk. VI, 14).

This is obviously similar in its sense to the burying of the head of Bran, and indeed it is linked with this, and with the twin dragons of Ambrosius related by Nennius, in the medieval Welsh Triad of the Closures and Disclosures of the Island. The Triads are suspect enough sources, and this one is presumably post-Galfridian, but the early authority for the other two items may be significant, and at all events it shows that the similarity in thought between the Bran and the Vortimer episodes had struck the Welsh compiler.

It would be tempting to equate the Vortimer story with an aetiological legend invented to explain the ruins of the Roman monument which stood on the great cruciform foundation at Richborough, but the archaeological evidence shows that this structure, built c. A.D. 100, was destroyed about 280 and its materials utilized in building the stone fort on the site.¹³ No remains would therefore exist to provide the

¹³ *Soc. Antiq. Lond. Research Comm. Reports: Richborough* I, 35; II, 3-4; III, 5.

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basis for a legend originating in the Middle Ages, and the Romano-British source assumed to have been used by Nennius for the section dealing with Vortigern would hardly include legendary material from such an early date, even if we assume further that Geoffrey also had access to this or a similar source-book.

It is however one thing to assume continuity of legendary oddments from Roman times into the Dark Ages, but quite another to carry a story back into prehistoric times. On the margins of prehistory we can identify such muddled references as that to the Belgic princes in the tale of Branwen itself, and, more accurately and explicitly, the important family relationships within the Catuvellaunian dynasties which are preserved in the early medieval Welsh pedigrees.¹⁴ Sir Cyril Fox has recently taken the matter a stage further, again in the very story of Branwen under discussion, and has pointed out how the Late Bronze Age trade in bronze cauldrons from Ireland to Wales is echoed in the conversation between Bran and Matholwch.¹⁵ This certainly implies, in surviving Welsh literature, a prehistoric stratum as early as the Late Bronze Age or the Early Iron Age,¹⁶ yet such generalized references are something different from the sharply localized and specific account of the building of a particular monument that we find in Geoffrey's story of Stonehenge. In this is implied a continuity more than could exist in casual hearth-side talk and stones that had become fairy-tales. For a legend to have survived in recognizable form from the earlier Bronze Age to the earlier Middle Ages—nearly three thousand years at the most conservative reckoning—it must have been embodied in some set of traditions which were carefully preserved in as nearly as possible their pristine form, transmitted along a channel from which outside influences were excluded. Such traditions, such channels, can surely only be those afforded by a religion and a priesthood.

Evidence for the existence of a certain continuity in religious ideas and ritual elements, usually connected with burials, from the Early Bronze Age at least until the Late Bronze Age, has been latent in the results of the archaeological research of the past few years, but it was left to Mr C. E. Stevens to bring matters to a head by his recent stimulating note on the Iron Age and Roman sacred sites at Frilford in Berkshire, in which he boldly claims a survival of Early Bronze Age cults

¹⁴ ANTIQUITY, 1941, xv, 284.

¹⁵ *Antiquaries Journ.*, 1939, xix, 372-3.

¹⁶ For Iron Age cauldrons in Ireland see Mahr in *Proc. R. Irish Acad.*, 1934, xlii, Sec. C. 11-29.

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into the period of the Roman Occupation of Britain.¹⁷ Briefly, he suggests a dual division of the native cults in the southern provinces of Roman Britain, represented on the one hand by the 'Romano-Celtic' type of square temple, an introduction from Gaul that he would associate with the Belgae, and on the other, in the non-Belgic regions, a survival of the Early Bronze Age religious conventions bound up in the worship at circular temples of wood or stone or earthen banks (Mr Kendrick's 'Henge Monuments') which at the Frilford site find expression in such a structure of Iron Age date, itself succeeded by a circular Roman building. Citing the abundant Roman material from such Bronze Age monuments as Stonehenge, Avebury, Arminghall and elsewhere, he argues for a persistence of their ritual employment during the Occupation.

This most attractive thesis is worth developing at somewhat greater length, since it is obviously of first rate importance in our Stonehenge enquiry. The sum of archaeological information suggests that in the Early Bronze Age there existed three main inter-related types of circular ritual structures or temples—an open space delimited by a ditch with one or two opposed causeways (e.g. Gorsey Bigbury); a circle or analogous setting of free-standing stones or wooden posts either by itself (The Sanctuary) or with the enclosing ditch (Arminghall, Arbor Low), and lastly, circular timber structures probably roofed buildings (Woodhenge, The Sanctuary).¹⁸ Though indirectly associated with burials, as for instance the ritually sacrificed infant at Woodhenge, they are not funerary monuments, but during the Middle Bronze Age one sees a religious syncretism at work in which versions of all these structures appear intimately associated with burials. The famous timber monument of Bleasdale in Lancashire, and the post-structures within barrows such as those of South Wales recently excavated by Sir Cyril Fox,¹⁹ or the other examples known from Middle Bronze Age sites from Yorkshire to Dorset, show one side of this tradition, and

¹⁷ *Oxoniensia*, 1940, v, 166-7. The Frilford excavation is described *ibid.*, 1939, iv, 1-70; comment on the post structure in the Iron Age temple by Bersu in *Proc. Prehist. Soc.*, 1940, vi, 90, n. 3.

¹⁸ *Proc. Prehist. Soc.*, 1936, II, 1-51; 1938, IV, 57; *Arch. Journ.*, 1940, xcvi, 193-222.

¹⁹ *Antiquaries Journ.*, 1941, xxi, 97-127; *ANTIQUITY*, 1941, xv, 142-61. Sir Cyril Fox, commenting on this, urges the importance of distinguishing 'between constructions based on the *driven stake* and those on the *dug-in post*; between hurdlers' and carpenters' technique—they may have different cultural origins'. (*In litt.*, Sept. 1941).

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the stone circles or ritual ditches inside barrows equally widely distributed, another; and while no non-sepulchral temple in the 'Henge' tradition is known at present in the Middle Bronze Age, it is improbable that none were built and that worship was confined to the ancient fanes. For in the Late Bronze Age we find the strength of the old tradition asserting itself in such diverse forms and widely distributed examples in both Lowland and Highland Britain as the megalithic horseshoe setting within the Deverel barrow in Dorset,²⁰ or the double-entrance ditch at the Loanhead of Daviot cemetery in Aberdeenshire,²¹ so that the appearance of the Frilford temple in the Iron Age comes as the natural culmination of a long-established native tradition of religious architecture rather than as in any way an innovation. And it appears not merely as a product of a purely religious continuity; the tradition owes its strength to the fact that the temple plan was itself a part of the heritage of the western European circular house complex, which took such firm root in Britain in the Early Bronze Age that it was still powerful enough to survive into the Iron Age in the face of the rectangular house-plan of the newcomers.²² The Woodbury farmhouse and the Frilford temple are complementary expressions of the Bronze Age architectural tradition in its domestic and its ritual aspects.

Mr Stevens quotes the casual finds of pottery and other objects on the famous Early Bronze Age 'henge' sites as probably indicating a continuance of worship in Roman times. Maumbury Rings at Dorchester received, it must be admitted, scant respect from the conquerors, who turned it into an amphitheatre; but at Stonehenge some structural addition or alteration seems actually to have been contemplated and partly carried out in late Iron Age or Roman times, when the Z and Y holes were dug around the already ruinous sarsen circle to hold stones or posts. The Stonehenge sequence is controversial, and attempts have even been made to claim it in its entirety for the Iron Age:²³ without entering into details here, an Early Bronze Age foundation, followed by a Middle Bronze Age ('Wessex Culture') grandiose rebuilding, and finally the Iron Age work mentioned above seems the most probable sequence, and one that forcibly demonstrates the continuity of the religious traditions behind it. And now, at the dawn of

²⁰ cf. Hawkes in *Antiquaries Journ.*, 1933, XIII, 434-5.

²¹ *Proc. Soc. Antiq. Scot.*, 1936, LXX, 278-303.

²² I have discussed this more fully in *Arch. Journ.*, 1940, XCVI, 213 ff.

²³ R. H. Cunnington, *Stonehenge and its date*, 1935. But see my review in *Arch. Journ.*, 1935, XCI, 336-9.

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the Roman Conquest and of written history, we can no longer escape reference to those elusive figures, obviously by now troubling the reader's mind by their equivocal reputation, the Druids. Mr Stevens avoided mention of the ominous priesthood; but such a body of legendary lore as they possessed, such countless verses as they memorized and taught to initiates, is an essential element in the religious continuity we have shown from the archaeological evidence to have existed, and if there were legends of the building of Stonehenge handed down to literate times it is these inheritors of a cult, acknowledged by themselves to be ancient and perhaps containing recognizable Bronze Age elements,²⁴ who are most likely to have been the medium of its transmission.

We have no direct evidence of the nature of the Romano-Celtic religion as practised in the native sanctuaries in the west and south of England. An occasional dedication, such as that to Nodens at Lydney (though not in a native type of temple) gives us a glimpse of a native god later to become no less a legendary figure than King Lear,²⁵ and at Cerne, in Dorset, it seems probable that another rustic deity was assimilated to Hercules, perhaps under the influence of the Commodus cult.²⁶ There is one entrancing glance, provided by Gildas and tantalizing alike in its brevity and its turgidity, of the gods of the immediately post-Roman period, the effigies of which, grotesque, stiff and savage, and more numerous than the gods of Egypt, he saw standing inside or outside the deserted cities—

. . . *nec enumerant patriae portenta ipsa diabolica paene numero Aegyptiaca vincentia, quorum nonnulla liniamentis adhuc deformibus intra vel extra deserta moenia solito more rigentia torvis vultibus intuemur*—*De Excidio*, cap. IV.²⁷

²⁴ As for instance the golden sickle for the cutting of the mistletoe, which Fox has plausibly equated with one of gilded bronze in the Late Bronze Age style. *Proc. Prehist. Soc.*, 1939, v, 242.

²⁵ J. R. R. Tolkien in *Soc. Ant. Lond. Research Comm. Report: Lydney*, 1932, pp. 132-7.

²⁶ *ANTIQUITY*, 1938, XII, 323-31.

²⁷ The sense of this passage has been obscured by Giles' misleading, though 'standard' translation. He quite unwarrantably translates *moenia* as 'temples', and seems to miss the point of *lineamentis deformibus* in taking it to be 'mouldering away', whereas it seems more likely that the reference is to a distorted style of representation (i.e. a 'celtic', non-Roman, artistic convention). A similar translation of this phrase to that of Giles is given by A. W. Wade-Evans in his S.P.C.K. edition of the *De Excidio*, 1938. *Rigentia* was emended by C. W. King to *ringentia*, which would give 'snarling': an attractive reading. (I am indebted to Prof. H. E. Butler for his views on the translation I have adopted).

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But he makes no reference to temples, and of these there is no mention until Saxon times when an alien series of religious cults had arrived to confuse the issue still further.

Yet it is perhaps possible that the ancient native cults persisted in many regions little changed, and that some of the *fana idolorum* Pope Gregory in 601 cautioned Mellitus against destroying in England, advising rather their re-consecration,²⁸ were products of the old Bronze Age tradition. Mr G. M. Young has made the intriguing suggestion that the *antiqua monumenta in locum ubi a ruricolis dicitur aet than holenstypbum* mentioned in the bounds of Bedwyn parish (Wilts.) in 778 were really some form of pagan Saxon timber circle,²⁹ or an open sacred fenced enclosure such as the *fana idolorum cum septis quibus erant circumdata* ritually profaned by Coifi in Yorkshire³⁰ and both would be as well explained by 'henges' in the native Bronze Age tradition as by an intrusive Saxon cult. In the mingling of pagan beliefs and religions in the Dark Ages we see flashes of the prehistoric rites in the gloom—St. Samson surprising the actors in a ritual drama at a menhir in Cornwall³¹; St. Kentigern being surprised by *ingens larvatorum multitudo statura et visu horribilis* engaged in some archaic ceremony,³² perhaps allied to that terrible disguising as a bull-calf on the Kalends of January against which the Penitentials thunder in vain.³³ In the twelfth century even we find *deus Helith* hinted at as being, not so long previously, worshipped in Dorset.³⁴ And behind and perhaps

²⁸ Bede, *Hist. Eccles.* I, xxx. The only possible example of such re-consecration seems to be at Knowlton in Dorset, with a church as early as the 12th c. in a Bronze Age earthen circle (ANTIQUITY, XIII, 152-5). The site of Ysptyty Cynfyn in Cardiganshire, often claimed as a church within a stone circle, has been discussed and discarded by Grimes (op. cit. supra, 21).

²⁹ *Wilts. Arch. Mag.*, 1932, XLV, 525-7.

³⁰ Bede, op. cit. II, xiii.

³¹ The incident is described in the early 7th cent. life of St. Samson of Dol, cap. XLVIII (*Acta Sanctorum* VI (July), 573-91 (Venice 1749), trans. by T. Taylor, S.P.C.K. 1925; cf. Hencken, *Arch. of Cornwall*, 1932, p. 214; Crawford in *Custom is King*, 1936, pp. 195-6).

³² Joscelyn of Furness' Life of St. Kentigern (late 12th cent.), quoted by Baring-Gould and Fisher, *Lives of the British Saints*, II, 238.

³³ e.g. that of Theodore of Canterbury (late 7th cent.); the practice had previously been denounced by the Council of Auxerre in the 6th cent. (Margaret Murray, *The Witch Cult in Western Europe*, 1921, p. 21).

³⁴ Walter of Coventry, *Memoriale* (Rolls Series, 1872), I, 60; ANTIQUITY, 1932, VI, 214-6; 1938, XII, 330.

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involving all, the cult of the witches, wherein whatever weight we attach to the strictures of Dr Murray's critics, a very considerable element of prehistoric religion must lie. The streams of continuity must have been mixed, crossing and shifting and sometimes dying out completely, but in the early Dark Ages at least a strong element in myth and legend must have endured from prehistoric times, and possibly even a confused religious tradition may have persisted, so that the *princeps sacerdotum idolatriae* who, standing *in tumulo excelso* by the shore at Selsey reviled Wilfrid, emissary of the Roman church,³⁵ may have had some title to descent from those Druids who seven centuries before by the Menai had cursed the approaching forces of the Roman army. And no less a personage than St. Illtyd came of a family of magicians and prophets, presumably of a pre-Christian religion.³⁶

To review the forgoing mosaic of suggestions: we have archaeological evidence of the continuity of use of a certain type of ritual structure or temple, with presumably an accompanying tradition of priestcraft and sacred legend, from the Early Bronze Age to the Roman Occupation, and what scraps of information we have do not preclude its even later survival into the pagan Dark Ages along with other elements of prehistoric cults. Such a continuity would provide a possible vehicle for the transmission of legend from an early period into literate times, and the fact that the legend under discussion relates to Stonehenge, a monument with evidence of constructional activity as late as the eve of the Roman period, increases our confidence in the probability of Geoffrey having derived his story from a fragment of Dark Ages legend originating in prehistoric times, and preserved in Welsh popular literature. There remains one point to be considered which may throw a little additional light on the reasons for the story's survival.

The transport of the stones from Ireland is by Geoffrey assigned to the joint efforts of two shadowy figures, Merlin and Aurelius Ambrosius, and this association is worth examining. The personality of Merlin as we have it in the *Historia* is very dissimilar from that in Geoffrey's later work, the *Vita Merlini*, where he is in all essentials the Celtic prophetic madman of the woods who appears as Lailoken in Scottish, Suibhne in Irish and Merddyn in Welsh legend.³⁷ But in

³⁵ Eddi, *Vita Wilfridi* (Rolls Series, 1879), cap. XIII.

³⁶ 'Eltutus . . . omnium artium philosophiae omnium Britannorum peritissimus erat, genereque magicus sagacissimus, et futurum praescius'. (*Vita Samsoni*, cap. VII).

³⁷ Parry op. cit.; for the Merlin-Ambrosius equation see also the introductory essays to *Merlin* (Early English Text Soc., 1899).

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the *Historia* he is not only at one point directly identified or confused with Ambrosius himself (*tunc ait merlinus qui et ambrosius dicebatur* Bk. VI, 9), but his supernatural qualities, apart from the Stonehenge and the Arthurian episodes, seem introduced only on the one hand to reconcile Ambrosius with the Dragon Prophecy attributed to him by Nennius, and on the other to enable Geoffrey to insert his earlier *Vaticinia Merlini* into the text of his new book. He represents in fact merely a separate embodiment of the magical attributes of Ambrosius at which Nennius had hinted.

Ambrosius is however a more substantial figure. His existence is vouched for independently by Gildas as well as by Nennius, both of whom agree in his patrician Roman lineage (typically improved by Geoffrey making him the son of the Emperor Constantine!) and he appears to be a Prince of Wessex, fighting against the Saxons and Vortigern, with Arthur as his *dux bellorum*. Geoffrey follows Nennius quite closely, and even the inserted episode of his coming from Brittany is not sheer invention, but utilizes an early legend known also to Gilla Coemgin, who translated the *Historia Britonum* into Irish in 1072.³⁸ But the introduction of the Stonehenge story is completely unrepresented in any source, and it remains to be seen whether Geoffrey's connexion of the event and the personage has any reason behind it. He is at pains to stress the Wessex connexions of Ambrosius-Merlin, the latter being found *in natione gewisseorum . . . ad fontes galabes quos fuerat solitus frequentare* (Bk. VIII, 10) and he may merely have associated a Wessex monument and a Wessex hero with no warrant except his own sense of fitness, or the association may have existed in the legendary source he employed. Such a connexion in folk tales may well have been made; if not the original builder of the first structure at Stonehenge, the chieftain of the Wessex Bronze Age culture who rebuilt the monument in the magnificent form in which it exists today must have been a figure whose renown throughout southern Britain was commensurate with the architectural achievement and the command of labour the monument implies. And what more likely than that Ambrosius should in the Dark Ages acquire the dim legends of his priest-king predecessor in the realm of Wessex, and through his own personality help to ensure a survival of the stories of its ancient stone temple, mingled with his own prowess against the invading Saxons.

If we accept the implications contained in the forgoing argument

³⁸ *Mon. Germ. Hist., Chronica Minora* III, 171.

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we must also accept a literary survival which though meagre and barbaric, would nevertheless be of the same order as that of the Mycenaean elements preserved in Homer. In the story of Stonehenge in Geoffrey of Monmouth we may have the only fragment left to us of a native Bronze Age literature—a literature which would be as natural an outcome of a heroic culture such as the Wessex Bronze Age (or that of Mycenae, with which indeed it traded), as are the gold-hilted daggers of the warriors, but so infinitely more perishable. We may have a story of the builder, and of the building of the great monument to the spiritual and political ascendancy of Bronze Age Wessex, handed down as part of the sacred lore of its priests long enough to ensure its incorporation in the legends accumulating round another Wessex leader, a Roman of the Dark Ages ; then preserved in the myths of the Celtic west and finally entering the body of written record of the Middle Ages among the legendary miscellanea of a romantic medieval ecclesiastic who may have fancied it as a fairy-tale.

Some Food-gathering Implements

A Study in Mesolithic Tradition

by E. CECIL CURWEN

COMMUNITIES which depend for their existence wholly or largely on food-gathering (*agriophages*)—hunting, fishing, and the gathering of wild vegetable products—use implements that differ somewhat from those used by food-producing peoples (*trophogens*) who live by agriculture and pastoralism. Actually it is seldom, if ever, possible to draw a hard-and-fast line between the two economies; we ourselves, for instance, with our highly industrialized food-production, still depend to a very large extent on an equally industrialized form of food-gathering, viz. fishing. This is because we have not yet learnt how to domesticate the herring. Archaeologically, however, the distinction can be made, as is now well known, between the food-gathering economy of the Mesolithic and earlier periods, and the food-producing economy of the Neolithic and later phases.

Here let us recall for the benefit of the general reader that according to present views material civilization, based on agriculture and the domestication of animals, first arose in western Asia and Egypt somewhere about the fifth or sixth millennium B.C., and spread very gradually westwards into Europe, eastwards into Asia, and to a very limited extent southwards into Africa. The effects of this economic revolution reached Britain in the west, and China in the east, almost simultaneously. In each case their arrival was marked by the introduction of agriculture (wheat and barley) and the domestication of certain animals, and the associated culture is defined as Neolithic. Previous to the rise and spread of food-producing cultures all the inhabited world lived by food-gathering, and even after the rise of the new economy the old survived in those areas that were not immediately affected by it, and in some remote parts even to the present day. On the other hand, many communities live by a combination of food-producing and food-gathering; this may depend on such local factors as climate, geography, vegetation, and the absence of factors facilitating either agriculture or

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pastoralism. In this way peoples which cultivate food-plants, but have no flocks or herds, and no pasturage, will depend to a very important degree on hunting and fishing. Such communities may be expected to derive their hunting and fishing equipment more or less directly from their purely food-gathering ancestors.¹

It is not the writer's purpose to discuss this equipment as a whole, but to draw attention to certain features which appear widely distributed in time and space, and which serve to emphasize the underlying unity of all food-gathering cultures from the Magdalenian and Mesolithic of Europe to the modern Eskimo and South Sea Islander. These features comprise the use of (1) multiple barbs and foreshafts on spears, arrows and harpoons, and (2) composite blades as cutting implements.

MULTIPLE BARBS AND FORESHAFTS

Barbs are backwardly-directed subsidiary points on or near the heads of spears, arrows or harpoons.² Similar points that are directed forwards or outwards are not, properly speaking, barbs, and are not therefore under consideration here, except in so far as multiple points may be useful for spearing fish. Otherwise their purpose is to aggravate the wound and to intimidate by their ferocious appearance—advantages more appropriate to savage warfare than to hunting. But the barb proper is essentially a hook, the purpose of which is to enable a hunter to secure a wounded victim and to minimize its chances of escape. Broadly speaking, the number of such barbs on a weapon reflects the degree of anxiety felt by the hunter on this score. If his hunting was little more than a pastime—a temporary diversion from war—a single pair of barbs on his arrowhead sufficed; this has been characteristic of Europe and Asia ever since food-producing civilization appeared there. If, however, he possessed neither flocks nor herds, and his dinner depended on his hunting game and spearing fish, he took care to multiply the barbs on his spears and arrows so as to ensure the capture of the most lightly wounded victim. The subsequent extraction of the weapon from the wound must have been extraordinarily laborious, as any fisherman will readily believe. In this connexion it is well to remember that a fish-hook is really a barb, and that the little barb at its point is a barb upon a barb. Also, just as in modern civilization fishing

¹ The probability that agriculture may have been 'discovered' independently in geographically isolated areas, such as America, does not affect the question under consideration here.

² See *O.E.D.*, *s.v.*

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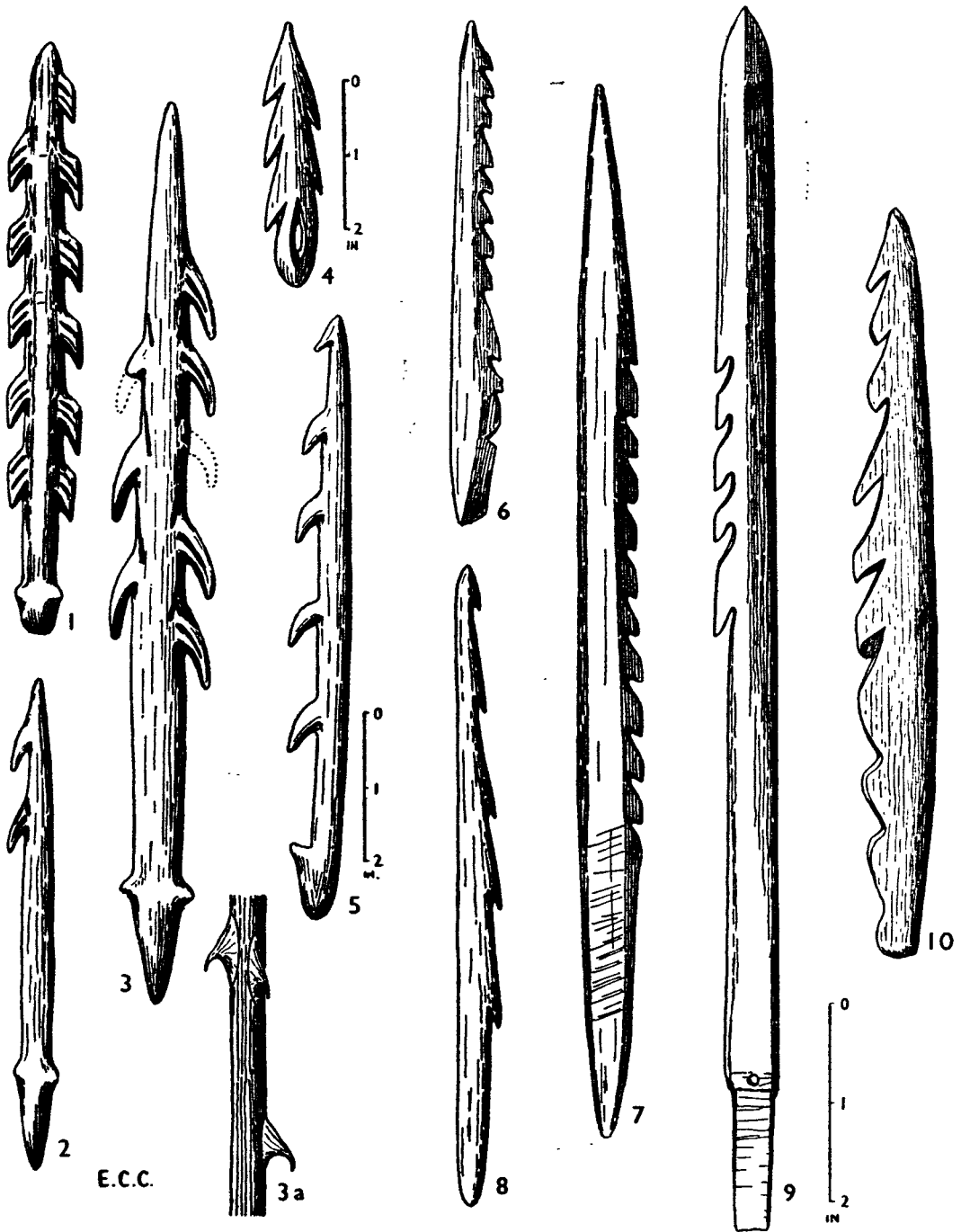
and whaling are the principal surviving forms of food-gathering, so the fish-hook and the whaler's harpoon are the only barbed weapons that we still use. In medieval England iron arrowheads with a single pair of barbs were generally used for hunting; for fighting, however, the arrowheads were normally without barbs, though no doubt there may have been many exceptions to the rule, and there were certain advantages in making it difficult for a wounded foe to extract the arrow and use it again.

Weapons furnished with multiple barbs are conspicuously absent from Europe and Asia in all periods subsequent to the Mesolithic. This is no doubt because the importance of pastoralism has caused hunting to be relegated to a mere sport, and the tradition of multiple barbs was early lost.³ The earliest multi-barbed weapons from Europe—in fact, the earliest known anywhere—come from the cave-deposits of the Magdalenian in southern France (FIGS. 1-3). These consist of long, pointed pieces of antler, with one or, more usually, two rows of barbs carved out of the solid. Though often spoken of as harpoon-heads⁴ their form suggests rather that they were *foreshafts* which were firmly fixed to wooden shafts for which they served as elongated 'heads'. The use of foreshafts is characteristic of most hunting peoples down to the present day: the forward end of the shaft of the weapon is made from a harder material than the shaft proper, which is commonly of light wood or bamboo. The foreshaft may be of hard wood, bone, horn, ivory or iron, and its length in proportion to the shaft is very variable. One of its functions is to carry the barbs when present, as well as to form the actual point of the weapon. Sometimes a stone or metal point is added as well (FIG. 11). The foreshaft, like the multiple barbs, is apparently foreign to the food-producing cultures of Europe and Asia, where a short flint or metal head, with or without a single pair of barbs, was attached directly to the wooden shaft.

The curved, hook-like form of the Magdalenian barbs strongly suggests that they may have been modelled on the thorns of the wild

³ A subsidiary reason for the absence of multiple barbs may lie in the greater strength of the iron barb used in Europe and Asia, as compared with those of wood and bone commonly used in food-gathering communities. These being more fragile needed reduplication.

⁴ According to *O.E.D.* the earliest sense of 'harpoon' was 'barbed dart or spear' (17th cent.). Its restriction to the implement with detachable head and thong dates only from the end of that century. The word comes from a root meaning to clutch or secure something.



FIGS. 1-10. MULTIPLE BARBS (BONE)

1-3, Magdalenian; Dordogne, France (casts in Brighton Museum); 3a, Thorns of wild rose; 4, Azilian; Mas d'Azil, France (after Boule); 5, Maglemose; Brandenburg (after Clark); 6, 7, Maglemose; Skipsea and Hornsea (after Clark); 8, Natufian; Mughareh El-Kebarah, Palestine (after Turville-Petre); 9, Eskimo (ivory); 10, Tierra del Fuego (9, 10, Brighton Museum)

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rose or similar shrub (FIG. 3), the retentive power of which varies with the number of thorns engaged in one's flesh or clothing. (Is there not in Central Africa a 'wait-a-bit' thorn-bush?)

The Mesolithic food-gatherers of the Maglemose and Azilian cultures of northern Europe (about 6800-5000 B.C.) carried on the tradition, using a variety of forms of 'barbed bone points'. While the Azilian type had two rows of barbs (FIG. 4), those of the Maglemose folk are almost invariably arranged in a single row down one edge, and the thorn-like variety is relatively uncommon (FIG. 5). In Clark's classification of the Maglemose points, comprising 20 types (excluding those which, having a flint armature, are not comparable), only four types have no barbs at all, and two have single barbs.⁵ As a general rule the barbs are produced by serrating the edge of the bone with a series of oblique notches (FIGS. 6, 7). As to the use to which these implements were put, Clark argues that in many cases they were mounted in groups of two or more, with barbs facing inwards, to form leisters—a special form of spear for catching fish or birds, and doubtless the prototype of the trident wielded by Neptune and Britannia (cf. PLATE II). In other cases they appear to have constituted the barbed foreshafts of spears or arrows, while in only a few examples⁶ does the shape support the view that they may have formed the detachable heads of harpoons, secured by a thong. The widespread distribution of this last device among modern hunting and fishing communities suggests that its origin must have been very early; harpoons acting on this principle, but of various forms, have been noted as in use among the Eskimo, the Indians of northwest America, the Ainus of Japan, the Andaman Islanders (for pigs; FIG. 17), in the Congo (for hippopotamus), and among the natives of Tierra del Fuego.⁷ Some of the last-named examples bear an extremely close resemblance to an early Scandinavian type;⁸ this similarity possibly being due to an ultimate common origin via Asia, combined with similar Arctic (or Antarctic) environment.

In remains of the Ertebølle culture that succeeded the Maglemose in Scandinavia barbed bone points are still found, though sparingly.⁹ Some may have been harpoon-heads. Offshoots of this culture in

⁵ Grahame Clark, *The Mesolithic Settlement of Northern Europe* (1936), 116.

⁶ e.g. Clark's types 9, 10, 12A and 15.

⁷ *B.M. Ethnographical Collections* (1925), 62, 78, 195, 261-4, 271, 302

⁸ ANTIQUITY, 1940, XIV, 134-5.

⁹ Clark, *op. cit.* 150-1, fig. 55, 7, 8 and 9.

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southern Sweden survived after the occupation of Denmark by Neolithic food-producers; in fact, it was a very long time before the gradual spread of food-production made its influence felt on the peoples occupying the more northerly parts of Europe and Asia. Food-gathering communities, very partially affected by Neolithic culture, survived at any rate into the Bronze Age over a vast area of Russia and Siberia in a state of culture that Clark describes as 'modified Mesolithic'. The fishing equipment of these peoples included barbed fish-spears and harpoons, and also 'slotted bone points' with both edges inset with flint flakes—a type of implement which we shall consider presently. It is these folk that are now believed to have supplied the earliest immigrants into America, via the Behring Straits.¹⁰

It is but a step from the Asiatic food-gatherers to the Eskimo of northeast Siberia and the extreme north of America, where we find

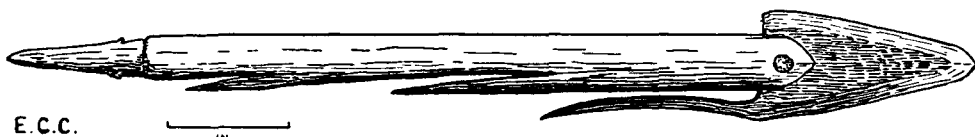


FIG. 11. BARBED BONE FORESHAFT OF ARROW, WITH ONE-BARBED COPPER HEAD; MODERN ESKIMO
(Brighton Museum)

scattered fishing communities which still depend entirely on food-gathering for their subsistence. The remarkable parallels between the equipment of the modern Eskimo and that of the north European Mesolithic food-gatherers have frequently been noted. Here we merely need to record the survival of barbed bone and ivory points, nearly identical with those of the Maglemose folk of Denmark—right down to the present day (FIG. 9). Some are used in leisters having two or three prongs (PLATE II, 1, 2), while others form the foreshafts of arrows, with or without the addition of a stone or metal arrowhead. Occasionally the latter may be asymmetrical, with a single barb (FIG. 11)—a variety that recalls our Epimesolithic single-barbed derivatives from the flint *petit tranchet*.

Turning to the opposite extremity of the American continent, we find the present inhabitants of Tierra del Fuego using fishing equipment very similar to that of the Eskimo. The Fuegians live on fish and molluscs, hunting sea-lions and large fish with spears and harpoons.

¹⁰ ANTIQUITY, 1940, XIV, 133.

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Among these weapons are barbed bone-points such as that illustrated here (FIG. 10), the resemblance of which to those of the Maglemose in northern Europe needs no emphasis. Clark, in pointing out this relationship,¹¹ uses it to underline the thesis that the New World was originally peopled by migrants of Mesolithic, or food-gathering, status. We shall not, therefore, be surprised to find comparable hunting-weapons among other food-gathering communities of the present day in South America.

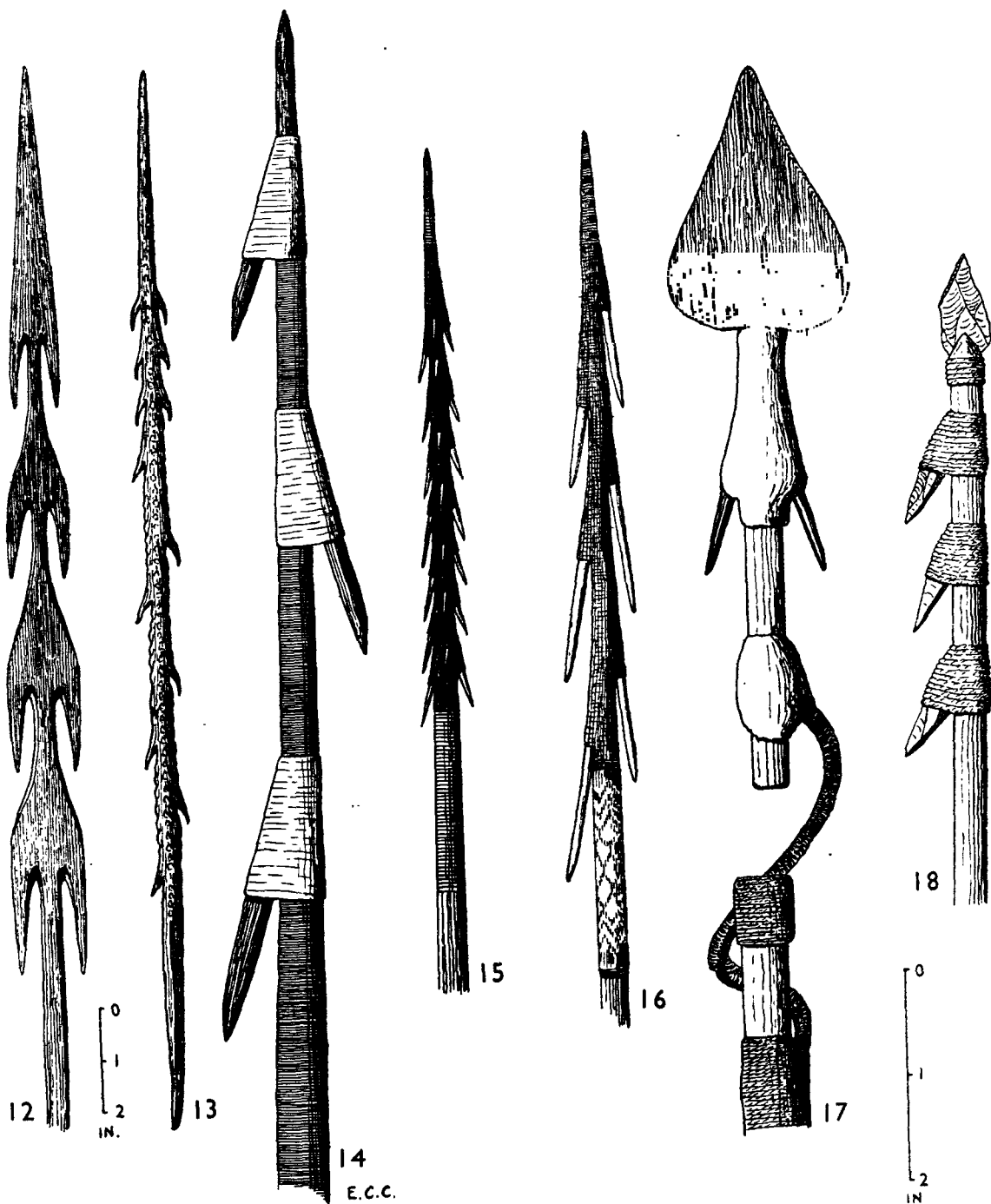
The close similarity between the equipment of the Eskimo and the Fuegians is no doubt partly due to the prevalence of similar climatic conditions involving scarcity of wood and abundance of bone and ivory ; in the South American forests, however, we find comparable weapons made of wood by tribes that are still mainly dependant on hunting and fishing, though they also indulge in some primitive cultivation. Very characteristic are large arrows, five or six feet in length, with foreshaft of hard, black wood forming about one third of the length, and furnished with a variable number of barbs (FIGS. 12, 14, and PLATE I, 5-8). Usually the barbs form part of the foreshaft, the whole being cut out of one piece of wood. They may be arranged in a single row like the Fuegian bone points, or there may be two rows arranged either in pairs or alternately. In another very interesting variety, to which allusion will be made later, the barbs consist of separate spikes of hard wood which are inserted into the foreshaft and firmly bound in position with cord (FIG. 14, and PLATE I, 6).

Let us now return to the Old World. In early Mesolithic deposits in the caves of Palestine (Natufian I) Turville-Petre and Miss Garrod found numerous barbed bone-points closely resembling those of the Maglemose culture (FIG. 8),¹² thus demonstrating that this characteristic weapon of Mesolithic economy was more widely distributed than was at first realized. Barbed points in bone and copper, with not more than three unilateral barbs, occur in prehistoric Egypt but their use faded out as food-production gained ground.¹³ Passing eastwards, we know that microliths have been found in India, but so far as the writer knows no barbed bone points have been found there. But in the Indian Ocean the present-day Nicobar islanders spear fish with barbed iron

¹¹ *ibid.* 134-5.

¹² F. Turville-Petre, *J.R. Anthr. Inst.* (1932), LXII, 272 and plate XXVIII ; D. A. E. Garrod, *The Stone Age of Mount Carmel* (1937), I, 37 and plate XII, 15-17.

¹³ W. M. Flinders Petrie, *Tools and Weapons* (1917), 37 and plates XLIII, 52-58, XLIV, 24-51.



FIGS. 12-18. MULTIPLE BARBS

14-18, inserted barbs; 12, large arrow, Amazon (wood); 14, ditto, wooden barbs inserted; 13, iron arrowhead, Congo
 15, 16, arrows, Solomon Islands (bone barbs?); 17, arrow-harpoon for pigs, Andaman Islands (blade and barbs iron)
 18, microliths mounted as barbs—suggested method
 (12-17, Brighton Museum)

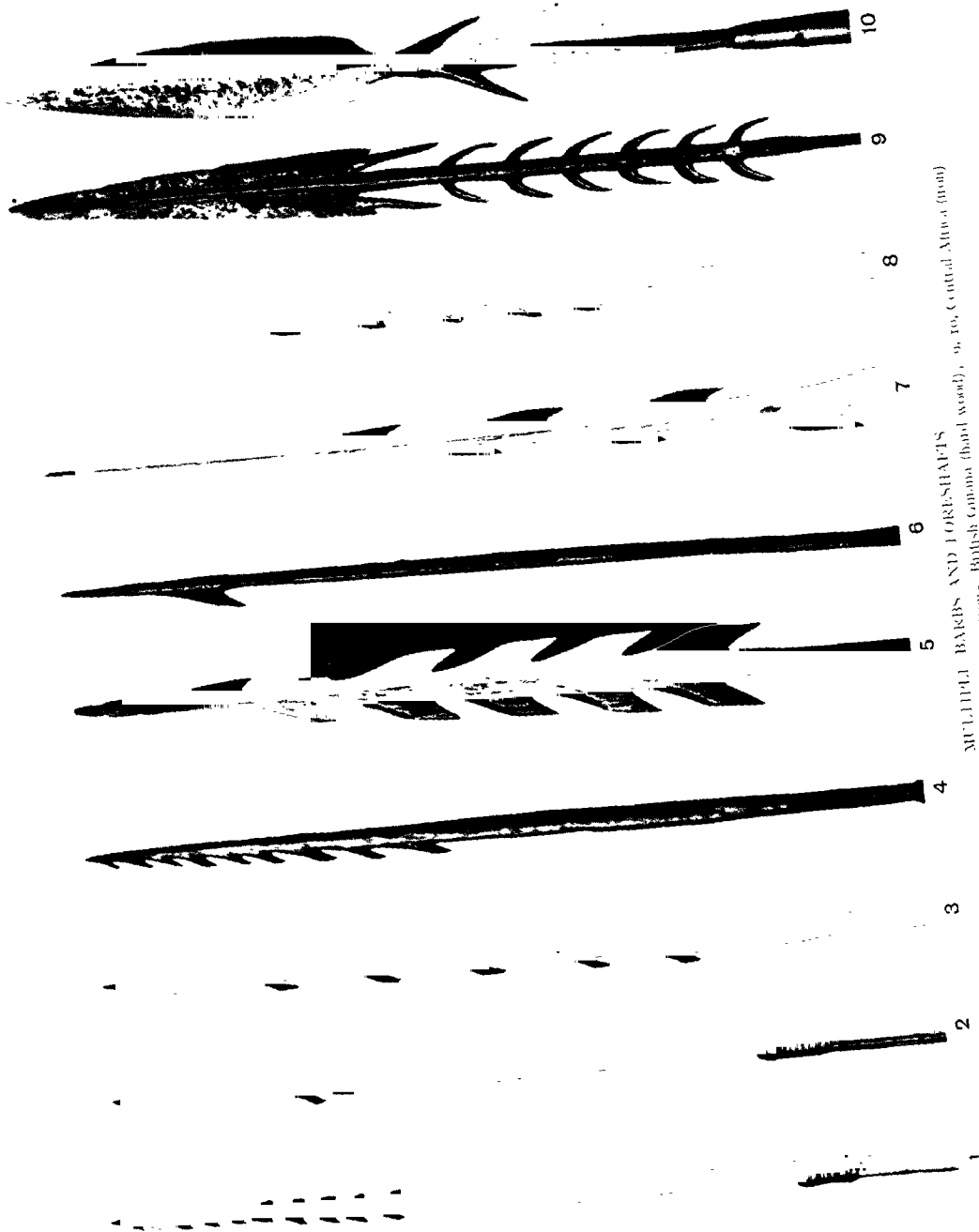
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leisters which closely resemble those of bone and ivory used by the Eskimos (PLATE II, 3, 4). Continuing southeastwards along the general line which the Polynesian migrations must originally have taken, we find that multi-barbed spears and arrows are peculiarly characteristic of the islanders of Oceania, both Melanesian and Polynesian, and of the aborigines of Australia. Though the South Sea Islanders practice agriculture, they have no flocks or herds, except pigs, and so depend to a very great extent on fishing, for which they use hooks, spears, nets and traps. Some characteristic barbed spears and arrows from the New Hebrides and the Solomon Islands are illustrated in PLATE I, 1-4, and FIGS. 15, 16. Here again the resemblance of the former to the barbed bone points of the European Mesolithic is remarkable, while the inserted bone barbs which characterize the weapons of the Solomon Islands form a noteworthy feature which recalls the example from South America already cited (FIG. 14). We shall return to a further consideration of this type presently. The problem of extracting such a weapon from a wound must be a serious one, recalling the old conundrum about passing an umbrella 'down a chimney up'.

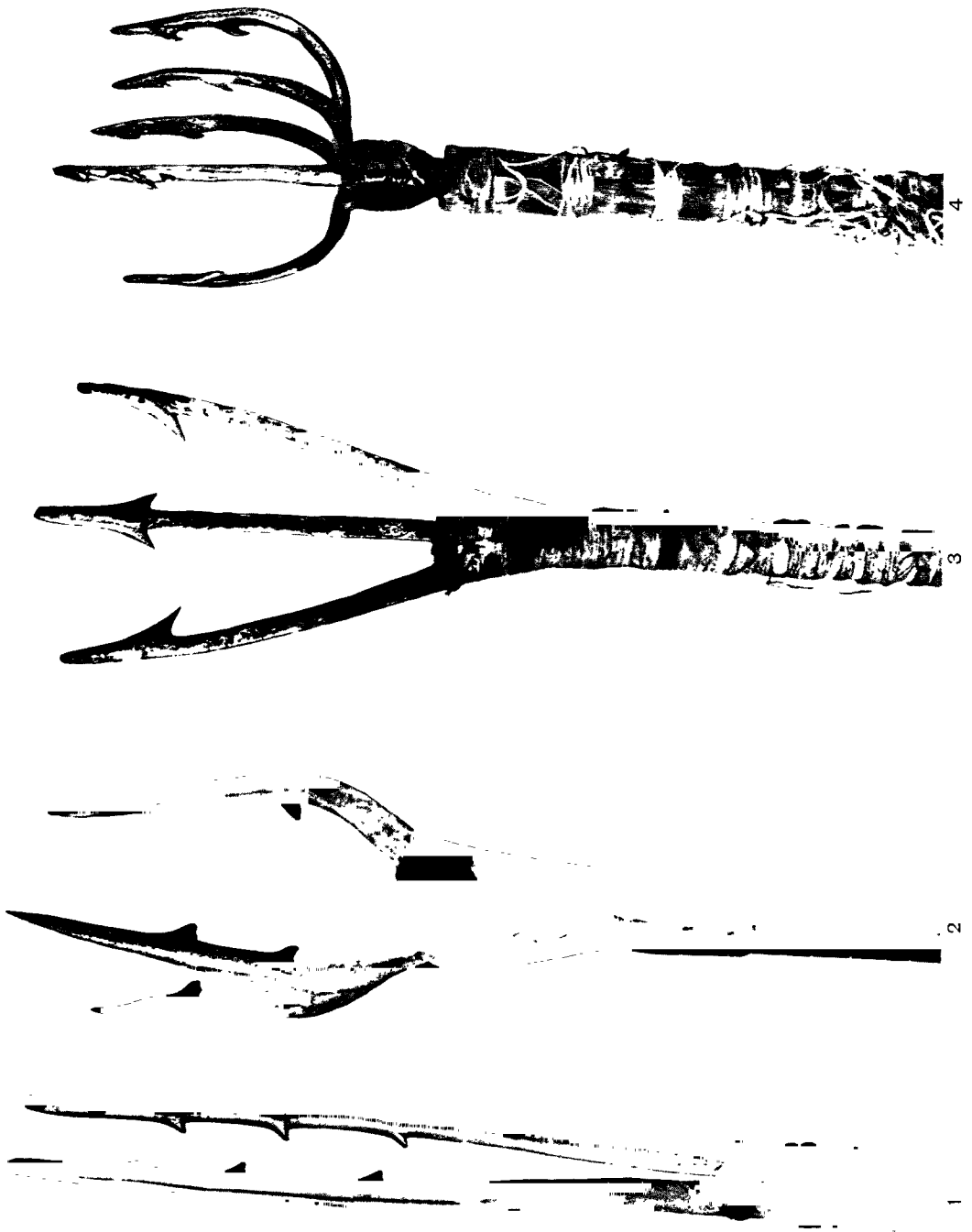
The peoples of Africa vary very much in their cultural status. To a large extent they are agricultural, while those who inhabit the 'park lands' possess herds of domesticated animals. Other factors which distinguish their status from that of the islanders of the South Pacific are (1) the general use of iron for weapons, and (2) the prevalence of big game. It is possible that the arts of agriculture, pastoralism and iron-working may have spread south from Egypt at a comparatively early date—certainly long before modern European contacts were established—in which case the cultural status of the people as a whole resembles that of Europe and Asia in a primitive and modified form, rather than that of Oceania or South America. It is therefore significant that multiple barbs are not very common on African weapons, though they are by no means absent (PLATE I, 9, 10, and FIG. 13). Foreshafts are also less conspicuous; the multi-barbed iron arrowhead from the Congo, shown in FIG. 13, is clearly as much an iron foreshaft as the Magdalenian bone points were bone foreshafts. The excessively long shanks, or tangs, of some of the iron spear-heads, with, or usually without, barbs are probably also of the same character. But on the whole the foreshaft is not specially characteristic of Africa. The undecided character of these two features fits in quite well with the primitive food-producing status of the people—not wholly detached from their 'Mesolithic' traditions.

PLATE I



MULTIPLE BARBS AND FORESHAFTS
 1, 2, arrows, New Hebrides (hard wood); 3, 4, large arrows, British Guiana (hard wood); 5, 6, Central Africa (hard wood); 7, 8, large arrows, British Guiana (hard wood); 9, 10, Central Africa (hard wood).
 (All in Broughton Museum)

PLATE II



MULTIPLE BARBS
1, 2, bird spears; 3, 4, fish spears, Niue Islands (iron)
(Brighton Museum) Ph. P. C. C.

SOME FOOD-GATHERING IMPLEMENTS

THE USE OF MICROLITHS AS INSERTED BARBS

We have seen that among modern primitive peoples which preserve certain Mesolithic traditions multi-barbed weapons of two main kinds are found: (1) those in which the barbs are carved out of the same piece of material as the foreshaft and form one piece with it (let us call this the 'one piece' type for convenience); and (2) those in which separate barbs are inserted into the foreshaft and secured by binding with cords (the 'inserted' type). The latter is a favourite method in the Solomon Islands (FIGS. 15, 16) and adjacent archipelagos, but less favoured elsewhere. It has been noted from the Amazon and British Guiana (FIG. 14 and PLATE I, 6), and single barbs are frequently attached to arrows in this manner in New Guinea. In all these cases the material used is generally bone or wood. In the Andaman Islands the spears and harpoons sometimes have inserted barbs of iron, singly or in pairs (FIG. 17), but not multiple.

Turning back to the Mesolithic of northwest Europe, we naturally enquire whether there is any reason to think that a similar duality of types of barbed weapons may have existed there also. The one-piece type we have already recognized in the 'barbed bone points' so characteristic of the Maglemose culture. During the same period another Mesolithic culture, the Tardenoisian, reached northern Europe from the southwest, bringing with it its most characteristic flint artifact, the 'microlith'. These tiny splinters of flint, an inch or so in length, are characterized by minute and careful secondary chipping which *blunts* a portion of one or both edges. They are found in very large numbers on dwelling-sites of this culture, and sporadically scattered over their hunting-grounds, and the suggestion has been made that some, at least, of these tiny worked flints may have been intended for use as barbs inserted into the shafts of spears and arrows (FIG. 18).

Unfortunately no direct evidence exists in the form of wooden shafts with microliths still fixed *in situ*, preserved in peat-bogs. Very suggestive evidence has, however, been noted by Mr Francis Buckley in the Pennines in Yorkshire. At one place he noticed that microliths of what he calls 'penknife' form are constantly found associated with an elongated or pear-shaped flint 'point'; in some cases a single 'point' and a group of 'penknives' have been found together, made from the same kind of flint, and unaccompanied by any other artifacts. These he interprets as the remains of barbed lances or arrows, the 'point' being the arrowhead, and the 'penknife' microliths forming barbs that were inserted into the shaft near to the point. He also noted

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that many 'penknives' are found broken, the fracture invariably occurring at the 'neck' or at the tip; this supports the theory, for it is evident that the projecting part of a delicate flint barb would be very easily snapped off.¹⁴ Even more striking was Mr Buckley's discovery of about 36 triangular microliths lying *in situ* in a straight line extending for about two yards, at a point south of White Hill on the border of Lancashire and Yorkshire. These he excavated carefully in the side of a waterworks sluice, where he found the whole set lying in an undisturbed Mesolithic layer (grey sand) below the peat.¹⁵ This seems an exceptionally long row to represent the barbs of a single lance; perhaps several lances had been lying in a bundle together. At any rate a strong case has been made for the view that *some* microliths were intended to be used as inserted barbs. It is not suggested that all microliths served this purpose.

Striking confirmation of Mr Buckley's views is presented by the discovery of the skeleton of an aurochs in northwest Zealand, with flint points embedded in two ribs—one bone-wound being healed, the other unhealed and evidently fatal—in addition to which two obliquely blunted microliths and another flake were found in close association, so as to suggest that the beast's death was caused by a lance or arrow that not only had a flint tip but also at least three flint barbs.¹⁶

The commonest form of microlith is the 'obliquely blunted point', more or less triangular in form. If these were used as barbs, what was the purpose of the blunting by means of steep secondary chipping? Three possible reasons suggest themselves: (1) the blunting might result from the trimming of the flake to the desired shape; (2) those parts of the edge of the microlith that were to come into contact with the cord that bound them into position (if such were used) might be blunted to avoid cutting the cord; or (3) whereas normally the forward (or outer) edge of a barb is sharp, to facilitate penetration into the flesh of the victim, the rearward (or inner) edge should be blunt to prevent it from cutting out of the wound, and the blunting might have been done for this purpose. On the whole the first reason commends itself as the most probable, but it is possible that the others, especially the last, may also have been correct, at any rate in certain cases.

¹⁴ Francis Buckley, *Microlithic Industry, Marsden, Yorks.* (1918), 11.

¹⁵ From information kindly supplied by the excavator for inclusion in this article. See also Petch, *Ancient Man in the Huddersfield District*.

¹⁶ Clark, *op. cit.* 89, 203-4.

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It is not unlikely that some microliths may have been built up into composite fish-hooks, or into gigs for 'snatching' fish, similar to those of wood and bone made by the Indians of the northwest coast of America.¹⁷

COMPOSITE BLADES

Closely related to the use of flint barbs for spears and arrows is another characteristic piece of Mesolithic equipment—an implement having a cutting edge formed by a row of flint flakes set side by side.

In northern Europe this device was used by the Maglemose folk to give a sharp cutting edge to some of their bone harpoon-heads.¹⁸ FIG. 19 shows one such specimen in which unworked flint flakes—not microliths—have been set obliquely in grooves along both edges of the bone point, thus serving in some measure as flint barbs, and at the same time giving the weapon jagged saw-edges. This specimen appears to form a link between the use of microliths as barbs on the one hand, and the use of a row of sharp flakes as a cutting instrument on the other. In the majority of these 'slotted bone points' with flint insets the cutting edges of the flints are roughly parallel to the edges of the bone, thus forming nearly continuous cutting edges. As will be seen, both types of composite blade—those with continuous and those with jagged edges—occur elsewhere down to recent times.

It is possible that parallel-sided 'used' blades, showing traces of wear on one or both edges, may have been mounted in this manner, either singly or as part of a composite knife. No trace of gloss seems to have been found on the edges of such 'used' blades from this period, so that there is no reason to regard them as parts of sickles. This, of course, agrees with other evidence that the Maglemose folk did not practise agriculture.

In the lower Natufian (Mesolithic) culture-levels of some of the Palestine caves Turville-Petre and Miss Garrod found several examples of this device of a composite flint blade mounted in a groove in a bone handle.¹⁹ Unfortunately, in most of the examples discovered the flint teeth were not found *in situ* in their mounts; two flints, however, still

¹⁷ *B.M. Ethnog.*, fig. 256.

¹⁸ Clark, op. cit. 116-7, fig. 41 (types 21-25), and plate v, 6, also figs. 55 (6), 61 (8), 62 (1).

¹⁹ *J. Royal Anthropol. Inst.* (1932), LXII, 261, 265, plate XXII (2), and fig. c (15-21); also pp. 271-2, plate XXVII (1), and fig. F (6-11); D. A. E. Garrod, *The Stone Age of Mount Carmel* (1937), I, 31, 34, 37-8, plates IX (15-21), XII (6), XIII (1, 3).

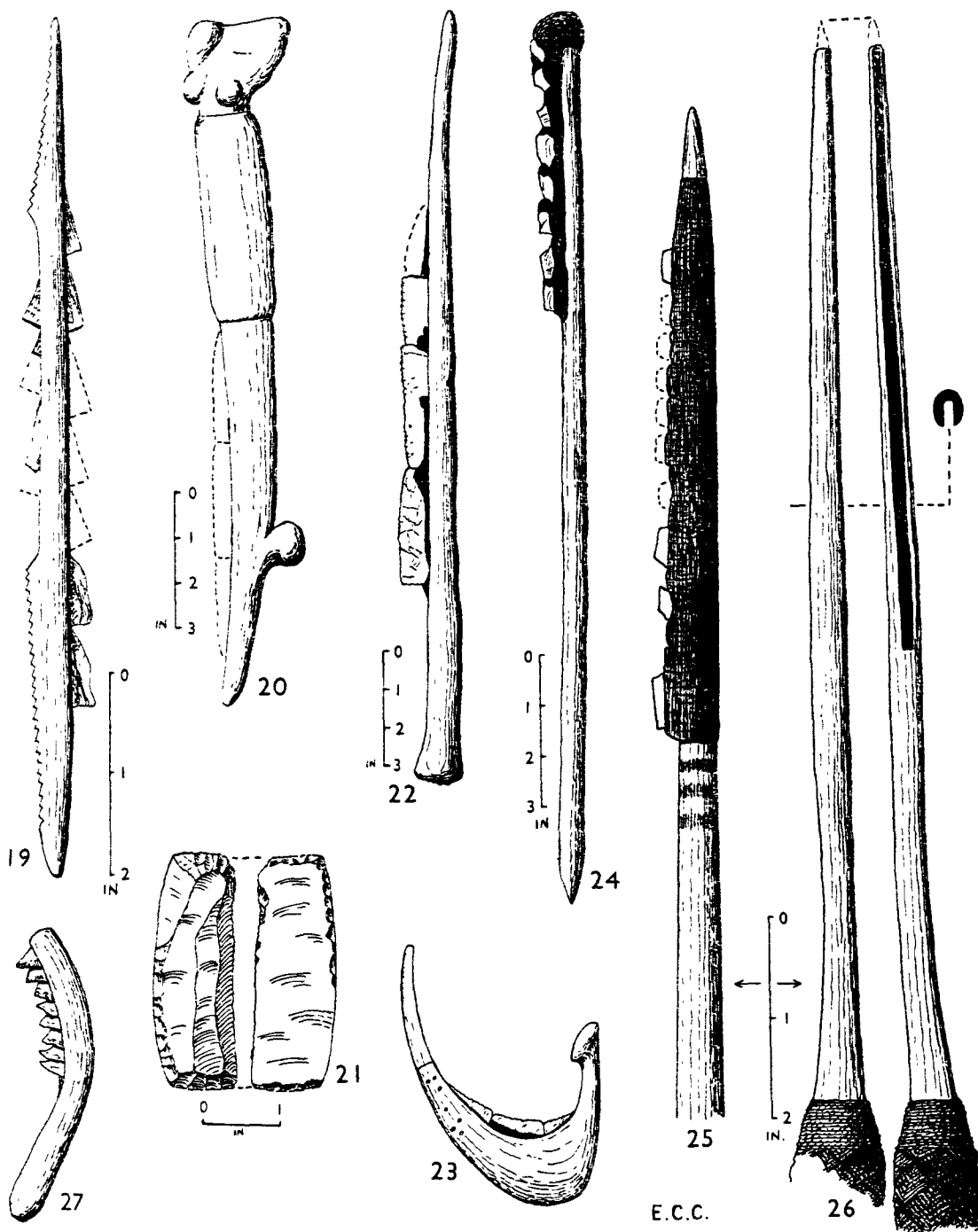
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in position in a fragment of slotted bone, confirmed the relationship between them. Two complete bone handles, one of which is illustrated in FIG. 20, consist of long bones, the handle end of each of which is surmounted by a carved animal head. Along one edge of the bone, extending from the base of the handle to the tip, is a deep groove in which the flint teeth were originally set end to end. The flints, of which considerable numbers were found loose, average two inches in length (FIG. 21); a majority have their ends squared so as to articulate with one another, or else pointed at one end to form the terminal member of a set. The great majority show signs of wear and a variable degree of gloss or lustre along the cutting edge; this gloss results from prolonged friction against a yielding material which is rich in silica, such as grass or straw, and its presence on the cutting edge of a flint is now recognized as evidence that it formed part of a sickle for cutting corn.²⁰

We have generally assumed that the discovery of a sickle indicates that its owner practised agriculture, and the writer has committed himself to this view in the past. But a typical early Mesolithic society practising agriculture at a period far anterior to any other known agricultural community is an anomaly that has puzzled many: nevertheless some are already taking it for granted that these Natufians were tillers of the ground, and this view bids fair to become axiomatic.

If these sickles, complete with corn-gloss, had been found in the settlements of the Maglemose folk of northern Europe, the inference that agriculture was practised by them would have been inevitable. But with the Natufians, who were at least as early in point of date, the case is different, because we have reason to believe that the wild prototypes of wheat and barley grew fairly abundantly in Syria and Palestine, so that this wild grain would have been an obvious and important article of diet among a purely food-gathering people who inhabited that district. The ears of wild wheat would need to be cut off just as much as those of cultivated grain, and what implement is more natural for the purpose than a knife consisting of a row of flint teeth set in a mount of bone or wood—a type we have seen reason to suspect may have existed among other Mesolithic folk as a general purpose knife? Though the evidence for this is only based on the bone harpoons with flint insets described above (Maglemose), yet there is a modern analogy which lends support to the suggested connexion between the two

²⁰ ANTIQUITY, 1935, IX, 63-5.



FIGS. 19-27. COMPOSITE BLADES

19, slotted bone point with flint insets, Sweden (after Clark) ; 20, bone handle of flint sickle (Lower Natufian), Palestine (after Turville-Petre), (length, 15 inches) ; 21, sickle-flint (Lower Natufian), Palestine (after Garrod) ; 22, neolithic flint sickle, Fayum, Egypt (after Caton-Thompson) (length 20 inches) ; 23, flint sickle, Egypt (after Petrie) ; 24, meat knife, West Australia ; sharp flakes of china ; 25, spear-point with row of sharp flakes of china, West Australia ; 26, slotted bone spear-head (insets lost), Philippine Islands (?) ; 27, composite flint knife or sickle, Spain (after Vayson, following Gougora)

(24-26, Brighton Museum)

The positions of missing flints, etc., are indicated by broken lines

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classes of implement. Some of the natives of Western Australia use a meat-knife consisting of a row of flakes of flint, quartz, or china set in gum along one side of a stick (FIG. 24)—a typical composite blade of the kind we have been discussing, the only difference being that the flakes are not set in a groove but applied with mastic. It is particularly interesting to note that they also set a similar row of flakes along one side of the point of a wooden spear (FIG. 25)—an analogy with the Maglemose flint-set harpoons which could hardly be closer.

There is also some further circumstantial evidence suggesting that a row of sharp flakes set in a grooved mount may have been a regular feature among Mesolithic peoples, both for use as knives and for increasing the cutting power of spear-heads. In the Brighton Museum there is exhibited a 'slotted bone point' mounted on a

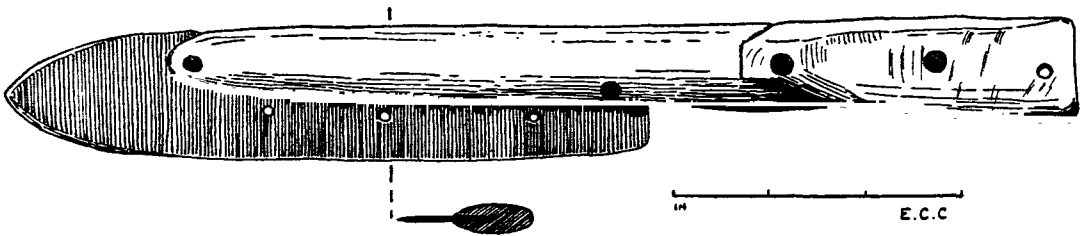


FIG. 28. ESKIMO KNIFE FROM CAPE YORK; IRON BLADE SET IN GROOVE IN IVORY HANDLE
Cf. with FIG. 20 for principle of hafting
(Brighton Museum)

bamboo shaft, said to have come from the Philippine Islands (FIG. 26). Unfortunately the sharp objects that must originally have been inserted in the groove (which is unilateral)—whether flakes of quartz or sharks' teeth—have been lost; but the implement as it stands bears a very close resemblance to the slotted Maglemose points of Denmark. In the same collection is an Eskimo knife consisting of an iron blade let into a groove in the side of an ivory handle (FIG. 28). This curious method of hafting, which resembles that of the Natufian sickle (FIG. 20) and is well suited for mounting a row of flint flakes, is quite unnecessary when the blade consists of a single piece of iron. It looks as if a traditional method of mounting has survived in spite of a change in the material and form of the blade.

While admitting the danger of arguing by analogy, there seem reasonable grounds to believe that the composite flint knife, mounted in bone or wood, may have been a regular feature among the implements used by food-gathering peoples in general, and that it proved to be a

SOME FOOD-GATHERING IMPLEMENTS

specially serviceable food-gathering implement in districts where corn grew wild.

We have seen that, in general, multi-barbed spears and arrows are not used by people who keep flocks and herds—largely because they are not employed for killing sheep and cattle but for securing wild game that would otherwise escape. The case of the composite flint blade, however, is different, for the same implement was equally suitable for cutting wild or cultivated corn. In general terms, therefore, while the change-over from food-gathering to food-production led to the disuse of multi-barbed weapons, including microliths, the composite flint blade, used as a sickle, survived in some parts for a very long time. In fact it was not finally discarded in Palestine till about 400 B.C. These flint sickles were made in two forms at first—straight (FIGS. 20 and 22) and hook-shaped (FIG. 23)—and after the Natufian period the mounts were always of wood. They have been found in Egypt, Spain and the Alpine lake-dwellings,²¹ and the characteristic flint teeth, showing gloss, are common in Palestine²² and Mesopotamia. While the flints are usually set to form a continuous edge, the jagged setting has been found in Spain (FIG. 27) and the Alps, and was perhaps occasionally used in Egypt. From the Alps northwards, however, the composite blade with continuous edge, arranged in crescentic form in the concavity of a curved wooden mount, gave place to a one-piece flint crescent, similarly mounted. These are the characteristic flint sickles of Scandinavia, and the change-over, which was no doubt due to the advanced skill of the north European flint knappers, seems to have taken place in the Alpine districts, for both kinds—the composite and the single piece—have been found there.²³

The survival of the composite blade among the modern aborigines of western Australia has already been mentioned. The use of the teeth of sharks or fishes for a similar purpose by the Gilbert Islanders, the Hawaiians and some South American Indians is probably another manifestation of the same Mesolithic tradition, though in this case the resultant edge is inevitably of the jagged variety, peculiarly useful in weapons of war. It may, however, be argued that in the absence of metal or flint there was little else but teeth from which cutting implements could be made.

²¹ For drawings see *ANTIQUITY*, 1930, IV, 181.

²² *ANTIQUITY*, 1935, IX, 62.

²³ *Proc. Prehist. Soc* (1938), IV, 29-32.

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CONCLUSIONS

In studying two probably interrelated characteristics of food-gathering peoples, past and present—the use of multiple barbs and of composite blades—an attempt has been made to suggest the existence of a Mesolithic tradition that has stretched unbroken from the days of the Maglemose folk, or even of the Magdalenians, down to the present time in certain parts of the world. That a Mesolithic tradition should survive for so long need occasion no surprise when one considers that the time that has elapsed since the end of the north European Mesolithic period (about 4000 years) is less than the estimated duration of that period (some 5000 or 6000 years).

In regard to hunting weapons, multi-barbed points disappeared wherever pastoralism took the place of hunting as a source of animal food. In the case of the composite blade, however, this primitive form of general purpose knife, which probably arose from observing the cutting effect of a row of sharp flint barbs on the head of a spear, became even more useful as a sickle after the introduction of agriculture. Instead, therefore, of being discarded it became more generally adopted in countries bordering the Mediterranean, and thereafter underwent a gradual process of development into more advanced forms.

Very many of the implements illustrated here belong to the large and representative ethnographic collection in the Brighton Municipal Museum, and the writer desires to express his indebtedness to Mr C. W. Musgrave, the Director, for allowing them to be illustrated here, and to Miss Patching, assistant Curator, for much trouble taken in producing the desired specimens from showcases and lofty wall-displays.

St. Alban and St. Albans

by WILHELM LEVISON

THE name of St. Alban, the *protomartyr Angliae*, occurs for the first time in the Life of Bishop Germanus of Auxerre which Constantius of Lyons wrote about 480. Germanus and his colleague Lupus of Troyes had been sent to Britain in 429 to fight against the Pelagian heretics; having succeeded, they visited the tomb of St. Alban to offer their thanks for the victory (c. 16, in *Mon. Germ. hist.*, *Scriptores rerum Merovingicarum* VII, 262): *Compressa itaque perversitate damnabili eiusque auctoribus confutatis animisque omnium fidei puritate conpositis, sacerdotes beatum Albanum martyrem, acturi Deo per ipsum gratias, petierunt.* The genuine text of the Life does not tell anything more of the martyr, who evidently could be presumed to be known to the reader. The uneventful return of the bishops to Gaul too is attributed to the intercession of the saint (c. 18, p. 265): *Tranquillam navigationem merita propria et intercessio Albani martyris paraverunt, quietosque antestites suorum desideriis felix carina restituit.*

Bede, in copying several chapters of this source almost verbatim (*Hist. Eccl.*, I, 17–21), added more details on the visit of the tomb (end of c. 18), which were transcribed later in the second, much enlarged Life of St. Germanus. In preparing my edition of the original text, I gave reasons for referring Bede's addition to the 'lost' *Passio Albani*, which no doubt he had used in a preceding chapter (I, 7) on the saint's martyrdom.¹ My conjectures on Bede's source were right. For at that very time Wilhelm Meyer, professor of Göttingen University and one of the founders of modern philology of medieval Latin, had discovered this source and two older texts of the *Passio Albani*. Their publication was a most important contribution to these studies, though it is sometimes overlooked today.²

¹ See my paper 'Bischof Germanus von Auxerre und die Quellen zu seiner Geschichte' (in *Neues Archiv der Gesellschaft für ältere deutsche Geschichtskunde*, 1903, XXIX, 1, 147–50, 162).

² 'Die Legende des h. Albanus, des Protomartyr Angliae, in Texten vor Beda' (*Abhandlungen der Kgl. Gesellschaft der Wissenschaften zu Göttingen, Philol.-hist. Klasse, Neue Folge*, 1904, VIII, 1). Cp. the reviews by J. B. Bury, *English Historical Review*, 1905, xx, 345–47, and H. Delehaye, *Analecta Bollandiana*, 1905, xxiv, 397–99; Hugh Williams, *Christianity in early Britain* (Oxford 1912), 106–9; H. Delehaye, *Les Passions des martyrs et les genres littéraires* (Brussels 1921), 403–7.

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St. Alban was celebrated during the Middle Ages in the Rhineland, as well as in other parts of the Continent. His name was not the origin of place-names on the Rhine, as in France; but more churches were dedicated to him there than in England. In some cases a local saint of the same name may have been confused with him. The legend of St. Alban at Mainz distinguished the patron-saint from the British martyr. The church stood on the site of an earlier one in a cemetery, where inscriptions recently found have thrown light on the transition from the Roman to the Frankish period. But here also, where the dedication to St. Alban can be traced back to 756—nearly to the death of the Anglo-Saxon St. Boniface—the festal day of the martyr was the 21st of June: this fact suggests the original identity of the local saint with the British martyr, whose day was the 22nd of the same month.³

At Cologne a parish church dedicated to the British saint existed (and exists today near the Gürzenich) as a sign of the old relations between this, the largest town of medieval Germany, and England. The church is first mentioned in the 12th century about the time when Henry II granted the earliest privileges to the merchants of Cologne. Another church of the same town, St. Pantaleon's, owned relics of a St. Albinus, which were said to have been brought from Rome by the empress Theophanu about 984; but these relics also were ascribed to the martyr of St. Albans. So his name is bound to be familiar to a Rhenish historian.

Local history enhanced my interest in the British saint. The development of Bonn was analogous in some respect to that of St. Albans. A Roman town preceded in both instances the medieval cities, which were situated outside the Roman walls—at Bonn a legionary fortress, *Bonna castra*, with its suburb; at St. Albans a *municipium*, Verulamium. Both fell into decay and disappeared. A new town arose gradually in the Middle Ages around a martyr's tomb and church on a hill with an old cemetery, at some distance from the destroyed Roman settlement—at Bonn around the 'minster' of SS. Cassius and Florentius; at Verulamium on the other side of the river Ver near the abbey church of St. Albans. The comparison might be continued. One might mention the part played by the royal 'borough' of Kingsbury

³ So H. Delehaye, 'In *Britannia* dans le Martyrologe Hiéronymien' (*Proceedings British Academy*, 1931, xvii, 301). The same difference of one day (and the changing of Albanus and Albinus) is found also in the additions of St. Alban's name in several texts of the Martyrologium Hieronymianum (*Acta sanctorum Novembris*, II, 2, pp. 328, 330); many calendars give both days accordingly.

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giving place to the borough of the abbot of St. Albans, and the manor of the archbishop of Cologne growing into the medieval Bonn; the new parish churches being 'proprietary churches' of the two monasteries; the relations between the citizens and the lords of the towns, abbot and archbishop. There were differences in the development of course—but *ne quid nimis*!

However the question is: has the comparison a real foundation at all? Has St. Albans grown up near a martyr's church indeed, near a *martyrium* originating in Roman times, or only wrongly regarded as such in the Middle Ages? No one has doubted the tradition since Bede, who expressly located St. Alban's martyrdom and church *iuxta civitatem Verolamium* (*Hist. Eccl.* i, 7). The earlier continental sources do not name the place; neither Constantius, nor the poet Venantius Fortunatus in a often quoted verse, nor the authors of the old Passions. Only the earliest British writer, Gildas, who wrote shortly before the middle of the 6th century, gives the name of Verulamium in mentioning the martyrs of Roman times, whose deaths he ascribed by conjecture to the Diocletian persecution (*De excidio Britanniae* c. 10):

Qui (Deus) gratuito munere, supradicto ut conicimus persecutionis tempore, ne penitus crassa atrae noctis caligine Britannia obfuscaretur, clarissimos lampades sanctorum martyrum nobis accendit, quorum nunc corporum sepulturae et passionum loca, si non lugubri divortio barbarorum quam plurima ob scelera nostra civibus adimerentur, non minimum intuentium mentibus ardorem divinae caritatis incuterent: sanctum Albanum Verolamiensem, Aaron et Iulium Legionum urbis cives ceterosque utriusque sexus diversis in locis summa magnanimitate in acie Christi perstantes dico.

Wade-Evans recently held the view⁴ that Alban did not suffer near Verulamium but, like Aaron and Julius, near the Roman legionary fortress of Caerleon in Monmouthshire, on Mount St. Albans, a hill situated northeast of Caerleon on the eastern side of the river Usk, where a Roman cemetery has left its traces: 'the author does not say that Alban suffered at Verulam, or Julius and Aaron at Caerleon, only that Alban was a man of Verulam, and that the other two were of Caerleon'. But why should Gildas have mentioned the towns, if the *corporum sepulturae et passionum loca* of the martyrs were not to be found there, to use his own words? Wade-Evans agrees that the martyrdom of Julius and Aaron is connected with Caerleon indeed, and draws the conclusion: 'We should naturally expect to find the "martyrium

⁴ A. W. Wade-Evans, 'The Site of St. Alban's Martyrdom', *Archaeologia Cambrensis*, 1905, 6th series v, 256-59; *Welsh Christian Origins* (Oxford 1934), 18 f.; *Nennius's History of the Britons* (London 1938), 131 (n. 2), 132 (n. 1).

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Albani " in the same district '. On the contrary, if the two others suffered near Caerleon, one must expect from Gildas' words the same in the case of Albanus and Verulamium. I shall not dwell on all the arguments of Wade-Evans. He bases his reasoning upon Gildas alone, instead of upon the old Passions, on one of which Gildas depended in repeating, from memory I think, a part of its contents. The name of the river, the waters of which Alban crosses before his death, is not given in the Passions; Gildas wrongly calls it the Thames (c. 11). This instance proves that he cannot have seen Verulamium and its river Ver, the small brook which separates the Roman town from St. Albans; nor could he have inserted the name of the Thames, if he had known Caerleon and the river Usk and believed that Alban also suffered there. Nor does Gildas speak of a military centre, a fortress like Caerleon, as the place of the martyrdom.

There was a chapel dedicated to the martyr on Mount St. Albans, as the names of the hill and of a piece of land ' called the chapel yard ' suggest even today; the church is mentioned in 1495 (Jos. A. Bradney, *A History of Monmouthshire* (1932), IV, ii, 305), but it might have been of comparatively late origin, from a time when the fame of the martyr had spread and had reached Monmouthshire. This can be seen from documents which mention the church of SS. Julius and Aaron, the other British martyrs of Roman age who are known from Gildas. That a church in or near Caerleon was dedicated to their memory might be presumed from his words, but it is attested the first time by a charter in the Book of Llandaff.⁵ It has the heading *De Merthir (=martyrio) Iún* (read *Iulii*) *et Aron* and tells the end of a struggle between three sons of Beli and the men of Bishop Nud of Llandaff. The object of the contest was *totum territorium sanctorum martirum Iulii et Aron*, which was given back by the adversaries to the church of Llandaff. A description of the boundaries of this ' territory ' in Welsh is added; here it is sufficient to state that they began and ended on the river Usk, in accordance with Gildas' mention of Caerleon. The charter can be dated about 870; the first of the lay witnesses are Mouric, king of Gwent, who died in 873, and his sons Brochvail and Fernvail, who some

⁵ *The Text of the Book of Llan Dâw* ed. J. Gw. Evans and J. Rhys (Oxford 1893), 225 f. (translation of the Welsh part p. 377; cp. Bradney, loc. cit. 294, 302). A few churches in Brittany were dedicated to St. Aaron, rather the martyr of Caerleon than an obscure hermit of St. Malo, in the opinion of J. Loth, *Les noms des saints bretons* (Paris 1910), 7 (cp. 147) and of F. Duine, ' Mémento des sources hagiographiques de l'histoire de Bretagne 1, (*Mémoires de la Société archéologique d'Ille-et-Vilaine*, 1918, XLVI, 380 f., off-print 138 f.)

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years later recognized the supremacy of Alfred the Great together with king Hywel ap Rhys of Glywysing, who witnessed several other charters of the same bishop Nud. A territory belonging to two saints must have been connected with one church dedicated to both.

More than two centuries pass before the church is mentioned again. The advowson, we might say the proprietary rights of it, had come to the Welsh lords of Caerleon, who were succeeded after the Norman Conquest by Robert of Chandos. In or shortly before 1113 he gave the church of Goldcliff to the famous monastery of Le Bec in Normandy for the foundation of a priory; the church was situated on the coast eastwards from the mouth of the Usk. He bestowed on it other property, as well as churches in his 'defence' of which he held the advowson; he mentions first *ecclesiam sanctae Trinitatis iuxta Karliun* and *ecclesiam Iulii et Aron*.⁶ The church of the Holy Trinity is now the church of the hamlet of Christchurch, on the eastern side of the Usk between Newport and Caerleon-ultra-pontem; it 'stands on an eminence and is a prominent landmark for miles'.⁷ Down the river, west of Christchurch, is the farmhouse of St. Julian's, once the residence of a branch of the Herbert family and, by his first wife, of Edward Lord Herbert of Cherbury, the philosopher. The place has been identified with our St. Julius, whose name was changed to Julianus in the Welsh genealogies of the tenth century in Harleian MS. 3859,⁸ though there existed English churches dedicated to saints of the real name of Julianus. Perhaps archaeologists may be able to find evidence of a church dating at least from the ninth century. Both churches, St. Trinity and SS. Julius and Aaron, are mentioned in the same way in two confirmations of the endowment of Goldcliff priory; one of c. 1154-58 by Morgan ap Owen (died 1158) who had brought back the lordship of Caerleon into Welsh hands, and by his brother Iorwerd; the other of 1204 by archbishop Hubert Walter of Canterbury.

In the meantime a third patron—St. Alban—had been associated with Julius and Aaron. In December 1142 young Henry Plantagenet was brought for the first time to England to give strength by his presence to the claims of his adherents against king Stephen; he came soon

⁶ *Monasticon Anglicanum*, 1830, VI, 2, 1022. The charter is known from an inspeximus and confirmation of Edward I of 1290; see Calendar Charter Rolls, II, 358, no. 1. The year 1113 is mentioned in the confirmation of Henry I preserved by another inspeximus of 1290, ib. 361, no. 1. The first roll is repeated in an inspeximus of Edward II of 1320, ib. III, 434 f.

⁷ *Journal British Archaeological Association*, N.S. XXXV, 15; cp. Bradney IV, ii, 309 ff.

⁸ E. Faral, *La Légende arthurienne* (Paris 1929), III, 54.

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afterwards to Bristol—not far away from Goldcliff—to be educated there, and returned thence in 1146 to France. The monks of Goldcliff thought it opportune to have a confirmation of their property issued in the name of the son of the ‘ empress ’ ; so ‘ Henricus dux Normannorum et comes Andegavorum ’, as the young pretender of ten years of age was styled here in anticipation, confirmed at Bristol in 1143 the donations of Robert of Chandos and of the other benefactors of Goldcliff.⁹ St. Trinity is mentioned as usual, but the other church gets the name : *ecclesiam sanctorum Iulii et Aaron atque Albani*. This triplet occurs again in 1201 in a confirmation by king John. The patronage of St. Alban apparently is accessory : it is missing in the earliest charters which mention the church, nor is it always added afterwards.

Julius and Aaron, of whom nothing was known but their martyrdom in Roman times, were mentioned by Gildas, Bede and others only in connexion with Alban, whose fame was increasing in the 12th century through his monastery. The monks of Goldcliff might have wanted to add relics of the more famous *protomartyr Angliae* to the bones of the two old patrons of the church, who alone connected their priory with ancient Christian times. We do not know when and where, between 1113 and 1143, they got the relics, which no doubt gave substance to the patron’s name. Relics reputed to be those of St. Alban were found in many places in the 12th century, and caused controversies between St. Albans and Ely which lasted for centuries. There might have been many opportunities of acquiring relics of the martyr ; but we may guess with some reason at some special occasion.

⁹ Charter Rolls, II, 362, no. 2 ; L. Delisle and E. Berger, ‘ Recueil des actes de Henri II roi d’Angleterre et duc de Normandie ’ (in *Chartes et diplômes relatifs à l’histoire de France*) (1916), I, 53, no. 48*. The title given to Henry II corresponds to the use of 1151–53 only ; therefore Delisle, *Introduction*, 130 and 511 (no. 46*) and Berger, loc. cit. I, 53 attributed the charter to 1153 (Delisle 511 to 1153–54). Berger recognized that one of the witnesses, Count Robert of Gloucester, died in 1147, and conjectured *Roberto* might be a blunder of the transcriber of the charter for *Willelmo*, Robert’s son and successor (pp. 53, 55). But another witness, the famous Count Miles of Hereford, died before, on 24 December 1143, to be succeeded by his son Roger ; the charter has to be dated from this very year. When Henry was brought to England the first time, the use could not yet have been fixed enough to call him only ‘ ducis Normannorum et comitis Andegavorum filius ’ ; the mention also of the Welshmen and of Wales, besides French- and Englishmen, Normandy and England, in the ‘ inscription ’ of the charter is unusual (Delisle, *Introd.* 209, n. 1 ; but see I, 182, no. 78). Another possibility is that Henry’s title was deformed by the transcriber of the charter. Delisle, *Introd.* 130 rightly had no doubt as to ‘ l’authenticité et la sincérité ’ of the document, which seems to be the first known charter issued in the name of Henry II.

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Goldcliff's connexion with Le Bec persisted in spite of all geographical and political difficulties till the 15th century, when the priory was given first to Tewkesbury and finally to Eton.¹⁰ St. Albans also had relations with the Norman house. Abbot Paul (1077-93), was a kinsman of archbishop Lanfranc of Canterbury, whose stay at Le Bec is well known; St. Albans had been committed to his care. The memory of the connexion was so strong that, according to the strange story of Matthew Paris, in his *Life of Offa II*, most of the first monks of the latter's foundation came *ex domo Becci*—nearly 250 years before Le Bec existed! Abbot Paul had begun the erection of a new church at St. Albans, which was consecrated in the presence of Henry I in 1115 (28 December). Abbot Geoffrey (1119-46) added a more precious shrine of the martyr; the old one was opened and the body transferred on the 1st day of August, 1129. So, in the interval between 1113 and 1143, this translation might have given the chance of parting with smaller relics of the saint, and might explain the appearance of his name with Julius and Aaron near the Usk. Anyhow, whenever the church got relics of the protomartyr, a chapel which gave the name to Mount St. Albans owed its patron-saint, as we may presume without scruple, to the old church, in the same way as a chapel of St. Aaron, which is said to have existed at Penrhôs north of Caerleon, no doubt derived its dedication from the same source.

I abstain from dwelling on the fictions of Geoffrey of Monmouth, who copied Gildas' words on the three martyrs, but doubled the common church of the two citizens of Caerleon, attributing to the town a church of St. Julius with a convent of nuns, and a church of St. Aaron with a chapter of canons. In ascribing to this church the third metropolitan see of Great Britain, he was opposing the aspirations of St. Davids. The influence of his historical romance was immense; his statements on the two churches also were repeated by Giraldus Cambrensis and others. But the real church of the two martyrs disappeared completely.¹¹ Archaeologists have lately revived the Roman

¹⁰ Rose Graham, 'Four Alien Priors in Monmouthshire', *British Arch. Assoc.*, N.S. xxxv, 104 f., 108 f., 112 f., 115 ff., 118 f.; cp. Bradney, loc. cit. iv, 2, 272 ff.

¹¹ Even the day of the two martyrs was forgotten. In later times their names were ascribed to the first of July: one of them had the name of the month, the other that of the high-priest Aaron, whose death was believed to have occurred on this day (cp. *Acta sanctorum Julii* 1, 9 ff., 17, *Novembris* II, 2, p. 345; Baring-Gould and Fisher, *The Lives of the British Saints*, I, 103). In Brittany Aaron's festival day was 22 June, the day of St. Alban; see Duine, loc. cit.

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fortress of Caerleon : let us hope that a chance may occur to unearth the 'merthir' nearby which nothing but the spade could bring to light. But it would be lost labour to search there for the *martyrium* of St. Alban too. It can be ascribed without hesitation to Verulamium and St. Albans, as far as certainty or probability is at all applicable to such traditions.

We can trace the cult of St. Alban back to the first part of the fifth century, when St. Germanus visited his tomb in 429. How many generations of Christians had already paid their devotion to his memory ? The authority of Bede established the 'tradition' that he, like Aaron and Julius, suffered in the Diocletian persecution. He depended on Gildas for this belief, but overlooked the fact that the British author had attributed these martyrdoms to the last and greatest persecution only by conjecture (c. 10, above p. 339) : 'supradicto *ut conicimus* persecutionis tempore' are Gildas' words, as Mommsen's critical edition has placed beyond dispute, instead of the evident miscorrection of a single manuscript *ut cognoscimus*. This dating was in contradiction to the express statement not only of Eusebius but also of Lactantius, and of some Donatists in a letter of 313 that in the part of the Roman Empire governed by Constantius Chlorus, Christians had not to pay for their faith with their lives, but, according to Lactantius, only churches were destroyed ; no martyrdom in the countries under his authority is ascribed to his time by any reliable witness. The contradiction disappeared by the emendation of Gildas' text ; the more since the publication of W. Meyer mentioned above showed that the *Passio Albani* used by Gildas and Bede gave no date for the persecution, so that Bede did indeed rely on Gildas' mere conjecture. As this fact is sometimes forgotten it may be worth while to insist on the meaning of the texts brought to light by Meyer.

His third *Passio* has so far only been found in a Paris MS. (no. 11748), which came from Saint-Maur-les-Fossés and was written in France in the tenth century or a little earlier ; it is the text used by Bede and perhaps by Gildas too (I shall call it, with Meyer, 'P'). His first *Passio* is preserved in a Turin MS. (D.V.3), also of French origin ; it was written at the end of the eighth century in the so-called *ab*-type of the script of Corbie (=r). Besides these two recensions of the *Passio* which survived each in a single French collection of Lives of Saints, there exists a small third text which is transmitted in an English MS. of the 12th century also (London, Gray's Inn, no. 3), but no doubt

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was derived like other texts of the Codex from a continental copy; for the continental tradition of this piece is larger and much older (Autun, *Séminaire* 34, 9–10th century; British Museum, Addit. MS. 11880, 9th century; Einsiedeln 248, 12th century). This short Passion (E) is an epitome of T—the first part being very abbreviated—which was expanded again into P, as Meyer has shown; it is the connecting link between both, as is manifest by words of earlier texts which were copied by the author of T, and of which some were repeated in E and fewer, by way of E, passed into P.

For T, especially its first part, is to some degree a cento composed of phrases of earlier sources, which Meyer has brought to light in his notes; his proofs can be enlarged from the same and other texts. This procedure, which is not unusual in hagiographical writings, might be made even more evident in a future edition by printing the borrowed words in different types. The short preface is taken from the *Passio Xysti, Felicissimi ac Agapiti* of Roman origin, in its separate form (BHL. 7809, 7811 f.)¹² There are phrases which are common to T and the *Passio Eleutherii* of Rome (ib. 2451, cp. 2450), as Meyer has seen; but a part of them and others are also found in the *Passio Quintini*, the martyr of Saint-Quentin (ib. 6999)—I will only mention the admonition of the prefect c. 11: '*consenti mihi et sacrificia magnis diis Iovi et Apollini*', cp. T c. 8 (Meyer, p. 50): '*immola et sacrificia diis nostris sacratissimis, Iovi et Apollini sacrificia offer*'.

Meyer compared also phrases recurring in the *Passio Symphoriani* of Autun of the fifth century (ib. 7967 ff), which became known to Celtic scholars by the discovery of old Gaulish words in the manuscript tradition of the text studied by Meyer; but here another text might be the real source. In an introductory chapter of T (c. 2) the persecution of the Christians in Gaul is mentioned, especially in *urbi Lugdunensium et Agennensium*. Meyer doubted the last name and thought of the more famous Vienne, and its Christian community which occurs with that of Lyons in the time of persecution. But the substitution of *Agennensium* for *Viennensium* is improbable from the palaeographical aspect as well as from the historical view. Why should a copyist have substituted the less known Agen for Vienne? The author, I suggest, rather had an interest in Agen, because one of his hagiographical sources

¹² I refer as to lives of saints to the numbers of the excellent *B(ibliotheca) H(agio-graphica) L(atina)* of the Bollandists, Brussels, 1898–1901, with *Supplementi editio altera*, 1911, and do not mention editions themselves.

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referred to this town of southwestern Gaul. There are two celebrated martyrs of Agen—Fides and Caprasius; their Passions originally were separate but later were united. Now the first *Passio Caprasii* (BHL. 1558) is mainly a plagiarism borrowed from the *Passio Symphoriani* mentioned above. The Caprasius-texts accessible to me do not contain two of the three Symphorianus-sentences discovered by Meyer (p. 81); but no critical edition exists of any of these Passions, and some parallels with τ can be found even in the combined Passion of Fides and Caprasius (ib. 2929 ff). So the suggestion may be permitted that an older recension of this Passion, not yet accounted for, was the medium between the texts on Symphorian and Alban.

However, Quintinus, Symphorianus, and Caprasius are martyrs of Gaul, and to the same country belongs the last and most important source detected by Meyer, the *Passio Irenaei* (BHL. 4457 b, c, which is introductory only), *Andochii*, *Thyrsi*, *Felicitis* (424), *Benigni* (1153), the martyrs of Lyons, Saulieu and Dijon. It was composed as one piece of work and as such is preserved in a Farfa MS. of about 900; but the parts relating to martyrs of single places afterwards were copied separately, when 'Passionalia' were arranged after the sequence of the calendar (Meyer 62 ff). This complex was composed in Burgundy in the time of Bishop Gregory of Langres (506-7 to 539-40), and its influence was large, though the historical value of these legends is very small. The author of τ used all parts of this source. The festal days of Alban (22 June) and Irenaeus (28 June) were separated by a short interval; so the reading of a Passion of the latter might have been obvious to a man writing for the glory of Alban. He had read not only legends—some phrases may be referred to the influence of Statius (Meyer 56, 26 'floribus picturatus'; cp. *Theb.* vi, 58), Vegetius (54, 22 'divinitatis instinctu'; cp. *Epit. rei milit.* II, 21),¹³ Hieronymus (48, 30 'antiquitas tradidit'; cp. *Epist.* 18, 6, 7, ed. Hilberg I, p. 82) and Rufinus (48, 4 'in ultimis partibus mundi'; cp. *Hist. Eccl.* iv, 7, 14, ed. Mommsen, p. 313).

His little work has no place in the rank of *Acta martyrum sincera*; it is a legendary tale, of which the essential contents (*via p*) are known to many readers from Bede. The trial, the debate between Alban and the judge, the river making way for the saint rushing to martyrdom, the well springing from the soil to supply him with water, the executioner

¹³ The famous inscription of Constantine's triumphal arch ('instinctu divinitatis') can be left aside.

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converted by his example and suffering as his 'colleague', and the other executioner, whose eyes fell to the ground together with the martyr's head: these are frequent elements of such *légendes épiques*, though the author remarkably abstained from the favourite theme of enlarging St. Alban's tortures. From the end of the martyr he passes at once to the visit of Germanus at his tomb, where the bishop deposited relics of all apostles and several martyrs,¹⁴ taking with him some dust from the place where Alban had suffered—*reliques représentatifs*, such as were used in the West in early times, when it was considered that the repose of the saint's body should not be disturbed. These details suggest, as Meyer has seen, that T was composed at Auxerre; a church of St. Alban existed there in the 9th century, which, according to tradition, had been erected by Germanus himself,¹⁵ and this tradition may be right in respect of the twofold mention of Alban in Constantius' Life of Germanus (above p. 337).

The description of the place of martyrdom outside the walls of the Roman town (T c. 16) is so accurate, that it seems to go back to early tradition.¹⁶ Only the rapidity of the river (c. 14) does not correspond with reality, and is a legendary exaggeration originating in the story of the *torrens* which made way for the martyr, while the bridge was crowded by people accompanying him on his last walk. There is a bridged ford near St. Michael's church in the 'marshy valley' of the Ver, which 'carried the road from Verulamium to Colchester in Roman times', today also leading from the ruins of the *forum*, and of a gate of Verulamium to the church of St. Alban on the other side of the river; this fact explains the origin of the legend. The presence of a well near the church no doubt resulted in the incorporation of the legend of the well (c. 17); the name of Holywell Street (today Holywell Hill) keeps its memory alive.

Text T is copied from a Merovingian MS. with the irregular orthography and grammar of the times and, consequently, is full of blunders; the editor had to correct many misreadings, leaving the emendation of

¹⁴ Constantius mentions that Germanus always had with him a *capsula* with relics of saints, *Vita Germani*, c. 4, 15, 43 (pp. 253, 262, 281).

¹⁵ Heiric, *Vita Germani* IV, 28 ff. (ed. Traube, *Mon. Germ. hist., Poetae Lat.* III, 476) and *Miracula Germani* I, 17 (*Acta sanctorum Julii* VII, 258); *Gesta pontificum Autissiodorensium* c. 7 (ed. L. M. Duru, *Bibliothèque historique de l'Yonne* I (Auxerre-Paris 1850), 318).

¹⁶ *Victoria Hist. Hertfordshire* (1914), IV, 285 f.; R. E. M. and T. V. Wheeler, *Verulamium*, 1936 (*Reports of the Research Committee of the Soc. of Antiq.*, no. XI), 32 f.

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others to a successor.¹⁷ But the little work had not even got the finishing touch. T seems to be derived from a first draft, to which some details had not yet been added, when E was excerpted (perhaps by the author himself thinking of another account?). Alban's conversion by the example of the cleric to whom he gave shelter in the persecution, is to be guessed only in T (c. 4); the execution of Alban himself is to be read between the lines but not told (c. 18). P added some words on the conversion; Bede with his sense of symmetry, using P filled the other gap also by a short sentence.

But we can see the legend in the very making even more. There are in T a few sentences which are out of place where they are transmitted, obviously marginal notes which were admitted into the text by a transcriber in wrong places (Meyer 32 f); there are no vestiges of these notes in E or P. Alban is said to have appeared to Germanus on the sea, when the bishop was sailing to Britain, *referente sancto Germano* (c. 21, p. 60), and when he was sleeping after the matins in the *basilica* of St. Alban, the martyr again appeared and revealed the circumstances of his sufferings (ib.): *dum se sopori dedisset, sanctus Albanus adfuit et que acta fuerant de persecutionibus eius, revelata tradidit utque titulis scripta retenerentur publice declaravit*. Miracles also worked in the presence of Germanus and effecting the conversion of pagans are a new addition (c. 22). These insertions possibly might be notes made by the author himself for an expansion of his work, or they might be additions of an early reader who had a similar intention. In any case, they confirm Auxerre as the home of the author.

One of his sources, the Irenaeus-cycle, was composed some years after 506 (Meyer 64); but he wrote before the middle of the sixth century. For not only Bede used in 731 P (derived from T through E), but one of the texts had already been read by Gildas who wrote shortly before 547 and, relating Alban's end freely and probably from memory,¹⁸ he exaggerated the miracle of the river making way for the martyr. He wrongly added the name of the Thames (above p. 340), and instead of

¹⁷ I suggest c. 2 (Meyer p. 46, 16) 'ecclesiam christianam [nu]per fundatam' for 'eccl. christiano per fundata'; c. 15 (p. 56, 9) 'horae spatio orationem posuit' for 'oraspatii oratione posuit', see e.g. Rufinus, *Hist. Eccl.*, IV, 15, 14 (ed. Mommsen p. 341) on Polycarp: 'unius horae ab eis spatio orationis gratia inpetrato', or *Passio Bonifatii Tarsensis* c. 9 (BHL. 1413): 'Transacto autem quasi unius horae spatio', etc.

¹⁸ I cannot agree with J. B. Bury, loc. cit. 346, who considered the possibility that Gildas had no written source but simply gave the legend, as it was orally current at Verulamium. But would he have spoken of the Thames in this case? Probably he had read the text, but it was not before him when he was writing.

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the people crowding the bridge and blocking the road, he told of a thousand men following the saint through the river like the Jews marching through the Jordan. The first *Passio Albani* therefore can be dated about 515-40.

We do not know which recension Gildas had read. It gave no date of the persecution in which Alban suffered (above p. 344). That is the case with E and P, which begin 'Tempore persecutionis sanctus Albanus . . .' and call the persecuting magistrate simply *iudex* (P twice *princeps* also). On the other hand, T ascribes the martyrdom to the emperor (Septimius) Severus, whose persecution in Gaul he knew from the *Passio Irenaei* (c. 6, Meyer p. 75), of which he borrowed so much; accordingly in T not *iudex*, but *Caesar* persecutes Alban, debates with him and gives the sentence of death. But a text of T seems to have existed before, where the author, in spite of all other borrowings from the Irenaeus-cycle, had not yet admitted the name of the emperor Severus. It is not very probable that this name should have been dropped in the epitome for the uncertain 'Tempore persecutionis', if it was to be found in the source, and that *iudex* was substituted for *Caesar*. There are traces of an earlier form without the name too; for in T also (c. 14, p. 54) is one mention of the 'judge': *Denique iudex sine obsequio* (that is, without his officials) *in civitate substiterat*, and after the conversion and martyrdom of the first executioner we are told (c. 20, p. 58): *Tunc impiissimus Caesar* (EP: *iudex*) *exanimis, tanta novitate percussus, iniussu etiam principum iubet de persecutione cessare, referens gaudere potius religionem caede sanctorum, per quam eandem opinabantur aboleri*—the emperor acting without an order of the *principes*, and making an official *relatio* to them? That presupposes a text, where a magistrate, *iudex*, was actor in the drama, not the emperor himself. Meyer (p. 21) sought the explanation of *iniussu principum* from the age of the author, in whose time the sons of Clovis had divided the governance of the Frankish kingdom; the emperor should, in the opinion of the writer, have asked his colleagues first. But this interpretation is unsuitable. The Merovingian kings, though representing in theory the same *regnum Francorum*, were independent of each other. There is no explanation but in the view that the present text is a concoction:¹⁹ it was not an emperor who acted originally, but a *iudex*, the name of Severus and the title of Caesar being introduced afterwards by the author from a source from which he had drawn before;

¹⁹ So also *Vict. Hist. Hertfordshire*, IV, 283, n. 13.

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but in correcting he overlooked a few passages which conflicted with his new procedure. That a persecution occurred in the time of (Septimius) Severus, he might have known not only from the unreliable *Passio Irenaei*, but also from Rufinus's translation of Eusebius; that the emperor in his last years came to Britain himself and died there at York (211)—he could read e.g. in the familiar Breviary of Eutropius or in the Histories of Orosius. Anyhow, we cannot trust his statement of the time of the martyrdom which was originally absent from his text, and have to acquiesce in our ignorance of the age of the British martyrs. In all probability they did not suffer in the Diocletian persecution; the 'tradition' created by a guess of Gildas and accepted by Bede, is built on sand. It is possible, as has been conjectured, that they gave their lives for Christ in the persecution of Decius or Valerianus about the middle of the third century. *Ignoramus* and *ignorabimus*: it is very improbable that even the archaeologists will be fortunate enough to contribute to a solution of this problem of early British church-history.

The tradition of Auxerre described the tomb and church of St. Alban as existing in 429; Gildas hinted at Verulamium as connected with the martyr's memory. Bede was not relying on Gildas alone in speaking more expressly of the same place as the site of Alban's martyrdom, and of the church of 'wonderful work' which was erected there in honour of the martyr, when peace had been restored to Christianity; it existed in the time of Bede (731), who related the cure of the sick, and frequent miracles operated there *usque ad hanc diem* (*Hist. Eccl.* 1, 7). The end of the eighth century brought a new phase in the history of the place. Though we have to rely on late sources only, the tradition may be right, that Offa of Mercia erected a new church, added a monastery of Benedictine monks and made an 'elevation' of the sacred bones which were put into a shrine in 793. The history of the foundation is obscured 'not so much by lack of information as by the difficulty of the task of disentangling fact from fiction'.²⁰ The legend of the foundation was written down in the early 13th century,^{20a} but some

²⁰ L. F. Rushbrook Williams, *History of the Abbey of St. Albans* (1917), p. 3.

^{20a} Roger of Wendover, *Chronica* (586, 793) ed. Coxe, 1, 91 and 251-59; Matthew Paris, *Chronica Majora* ed. Luard, 1, 252, 356-61; Paris' *Vita Offae secundi* ed. Wats, *Matthaei Paris Historia Major* (London 1684), 982 ff. (on its relation to the Chronicles cp. L. Theopold, *Kritische Untersuchungen über die Quellen zur angelsächsischen Geschichte*

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features can be traced a century back. According to the tradition of St. Albans the old church had been destroyed by the pagan Saxons, and the site of the martyr's tomb was forgotten, until it was miraculously revealed to Offa and the *inventio* of the relics in accordance with the revelation was performed on 1 August 793. This legend of the forgotten tomb and the miraculous invention is in open conflict with Bede's statement, nor can the opinion be held that the knowledge of the tomb was lost, between 731 and 793, in an age when all England was Christian, superficially at least, and the cult of saints was a predominant feature of religion.

Not an invention, but a translation, had to be made of course, when the body of the martyr was removed the first time from the earth and put in a shrine. Cotton MS. Domitian A. VIII of the Saxon Chronicle of about 1100 (F) has as the annal for 793: '*Translatio sancti Albani*';²¹ an entry made in the later 12th century at Canterbury into Winchester Annals (Cotton MS. Nero A. VIII) changed the first word: '*Inventio sancti Albani martyris*'.²² Two treatises of the 13th century on St. Alban's invention distinguish between the day of the invention by Offa, 1 August, and the day of the translation of the relics into the new church after some years, 13 August (*Illustr.* pl. 32, 42); this might have been the real day of the earliest translation. The first of August occurs in an agreement of about 1050, when an annual payment was fixed to be made to the monks of St. Albans *ad festivitatem sancti Petri ad*

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des 8. Jahrhunderts, Diss. of Göttingen 1872, 112 ff.); *Chronica Johannis Wallingford* ed. Gale, *Historiae Britannicae*, etc. *Scriptores* xv, 1691, 530; the double *Inventio S. Albani* (BHL. 215-6; Hardy, *Descriptive Catalogue* I, 1, p. 16, no. 28-29) in Dublin MS. Trinity College E. 1. 40 (cp. P. Grosjean, *Anal. Bolland.*, 1928, XLVI, 96 f.), fol. 50 v-62 v, 66 v-68 v, of which, besides fragments published by Ussher (Usserius), larger parts are accessible by the reproductions of W. R. L. Lowe and E. F. Jacob (with a preface by M. R. James), *Illustrations to the Life of St. Alban* (Oxford, 1924), with the drawings referred to Matthew Paris (quoted *Illustr.*); some forged charters. On the problems of the historiography of St. Albans I will only mention Claude Jenkins, *The Monastic Chronicle and the Early School of St. Albans* (1922); F. M. Powicke, 'Notes on the Compilation of the *Chronica Majora* of Matthew Paris' (*Modern Philology*, 1941, xxxviii, 305-17), and—for the later Middle Ages—V. H. Galbraith, *St. Albans Chronicle 1406-20* (Oxford 1937), pp. xxvii ff.

²¹ Petrie, *Monumenta historica Britannica* I, 1848, 338, n. 24; cp. Ch. Plummer, *Two of the Saxon Chronicles parallel* I, p. 56, n. 1; II, p. 62 and II.

²² F. Liebermann, *Ungedruckte Anglo-Normannische Geschichtsquellen* (Strassburg 1879), 63.

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Vincula;²³ a festivity of the martyr is not mentioned on that occasion. On 1 August Peter's pence had to be paid every year,²⁴ which was claimed by the abbey itself from the monastic lands; its introduction, in which Offa seems to have had a share indeed, was connected in the legend with St. Alban's invention. The idea of this festivity might have been promoted by the neighbourhood of the *Inventio Stephani protomartyris* on 3 August.²⁵ The festivity is mentioned first about the year 1115, when the new church was consecrated (above p. 343): Bishop Robert of Lincoln (1094–1123) in the time of abbot Richard (1097–1119) granted an indulgence to all penitents coming *ad praedictam festivitatem* to St. Albans (*Gesta abbatum S. Albani* ed. Riley, I, 92). Abbot Geoffrey (1119–46) seems to have been a special promoter of the legend. Its first elements are to be found in the works of William of Malmesbury in the time of this abbot, who gave to the monastery a vestment with embroidery representing the invention (*Gesta abb.*, I, 94). When in 1129 he transferred the relics of St. Alban from the old shrine into a more precious one, he chose as the day of translation the occasion of the 'Invention'-festivity, but shifted its future celebration to the next day, the 2nd of August, because the 1st was occupied too much by the feast of St. Peter in Fetters. Therefore the *Inventio* is marked on the 2nd in the St. Albans calendars, the oldest of which are written in the time of abbot Geoffrey.²⁶ That the 1st of August, not the 2nd, had been the festal day till 1129, is confirmed by the fact that the same calendars which note the Invention on the 2nd, mark the octave of the martyr on the 8th, not on the 9th, of August, and a late one, besides the Invention of the 2nd, adds 'De sancto Albano' on the 1st, in accordance with the legend of the invention by Offa.

In any case, there are sufficient reasons to doubt the story of the destroyed church, the forgotten tomb and its revelation in 793: it can be neglected by the historian as well as by the archaeologist. The foundation of the monastery, in accordance with the tradition, may have effected the erection of a new church and the 'elevation' of the

²³ Charter referring to abbot Leofstan and Tova, widow of Wihtric, ed. Kemble, *Codex diplom. aevi Saxon.*, IV, 284, no. 950; Luard, loc. cit. VI, 29, no. 12.

²⁴ F. Liebermann, *Die Gesetze der Angelsachsen* II, 2, p. 610, § 15 (cp. II, I, p. 173).

²⁵ Stephen is compared to St. Alban in Dublin ms. fol. 61 f., *Illustr.*, pl. 50 f.

²⁶ Ad. Goldschmidt, *Der Albanipsalter in Hildesheim* (Berlin, 1895), 28; Fr. Wormald, 'English Benedictine Kalendars after A.D. 1100, I, 41 (*Henry Bradshaw Society*, LXXVII, 1939); J. Dalton, *Ordinale Exon.*, II, 421 (ib. XXXVIII, 1909); *Annales Henrici IV*, 1406 (in *Johannis de Trokelowe Annales*, ed. Riley, 420).

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relics and their 'translation' into a shrine; but there seems to have been, here at least, no gap between Roman and Saxon times, and though the direct legacy from the Roman province to England may be 'negligible',²⁷ the cult of St. Alban was one of the survivals.

The legend of the martyr himself so far was the same which Bede had told following the third *Passio*. There are other texts which are copied more or less verbatim from Bede (BHL. 206-10, etc.). The author of the Old English Martyrology (c. 850), as well as Aelfric for his homily on the saint, had no other source. The *historia*, which abbot Aelfric (bishop of Ramsbury from 990, archbishop of Canterbury 995-1005) is said to have composed for liturgical singing, and the tapestry, on which the suffering of St. Alban could be seen, given to the abbey by abbot Richard (1097-1119), no doubt depended likewise on Bede.

But a few years only had passed since the translation of 1129, when a new epoch in the history of the legend was initiated. The author of the first *Passion* had told that Alban, though pagan, had given shelter to a cleric fleeing from the persecution, and had presented himself to the persecutors, putting on the great-coat (*caracalla*) of his guest, of whom no further mention is made. We are not informed whether he escaped death by Alban's sacrifice, or if he too became a victim of the persecution. Nor did E, P, Gildas or Bede give an explanation; Gildas expressly speaks of mutual changing of clothes (*vestibus*), and P and Bede tell in a few words how the example of the *clericus* caused Alban's conversion to the Christian faith. Geoffrey of Monmouth copied the words of Gildas; but adding *suum* he changed the confessor of the faith into the confessor of Alban (corresponding to Bede's *magistro suo*). He added more: he gave him a name, Amphibalus, which was absolutely unknown until then. It is controversial whether he was induced by a wrong variant reading in Gildas, or by a misunderstood gloss to Bede's *ipsius habitu, id est caracalla*. One may doubt whether *amphibalum* (originally *amphimallum*) was a more usual word than *caracalla*, and was appropriate for explaining it; Geoffrey in reading of *vestibus* or *caracalla* of the confessor might have got the idea of the name immediately. He invented not only the name—the work of this romancer is full of inventions—he 'canonized' too Alban's protégé, attributing to Winchester a church of St. Amphibalus, where prince

²⁷ R. Lennard, 'From Roman Britain to Anglo-Saxon England' (in *Wirtschaft und Kultur. Festschrift zum 70. Geburtstag von Alfons Dopsch* (Baden near Vienna 1938), 72 f.

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Constans was to become a monk and a son of Modred was murdered before the altar by king Constantine, according to this historical novel. So a new saint came to light in 1136-38.

The invention had consequences at St. Albans itself after some time. Abbot Simon (1167-83) added to the shrine of 1129 a precious exterior feretory, where the life and death of St. Alban were represented in gold and silver (*Gesta abb.* 1, 189). The abbey had incurred heavy debts (ib. 183, 193); anyone who knows the medieval misuse of pious belief and offering, will not be surprised to learn that just at this time the generosity of the devotees was stimulated by the discovery of the history and, what was more, of the relics of St. Amphibalus. 'The possession of an attractive collection of relics and wonder-working images was as economically important to a monastery as is a good display of ruins to a modern tourist resort'.²⁸

At first a monk, William, composed a new extensive Passion of St. Alban (and Amphibalus!) by command of abbot Simon (BHL. 213). The author emphasizes that his work is not a new fabrication but a translation from an old English book, except the name of Amphibalus, which he inserted from the history of 'Gaufridus Arturus', that is Geoffrey of Monmouth. He even gives a preface and an epilogue of the alleged predecessor, who pretends to write in the times of the pagans and to conceal his name for fear of his life. But this is forgery; if an English text has existed at all, it cannot have been anything but a first draft as base of the 'translation'.²⁹ The author used Bede's chapter on St. Alban, but this short text was changed into a large piece of work by clumsy inventions after the usual pattern. Alban is not a lone hero in the forefront, but Amphibalus gets a great share of the glory of a martyr. We are informed of Alban's noble Roman origin; the story of the conversion is spun out at length; the tortures and the end of Alban,³⁰ of Amphibalus and of the converted soldier who declined

²⁸ O. G. S. Crawford, *Western Seaways* (in *Custom is King: essays presented to R. R. Marett*, London 1936, 182, n. 2).

²⁹ About the middle of the 13th century the old English text had been changed in the tales of the monks into a history of St. Alban written in the *idioma antiquorum Britonum* or *antiquo Anglico vel Britannico idiomate*, which was found in the ruins of Verulamium in the time of abbot Eadmar in the 10th century. It was deciphered by a learned priest Unwona, and turned at once to dust, when its contents had been made known; see *Gesta abb.* 1, 26 f. cp. R. M. Wilson, 'Some lost Saints' Lives in Old and Middle English' (*Modern Language Review* (1941), xxxvi, 161 ff).

³⁰ *in loco qui vulgi consuetudine Holmhorst vocabatur* (§ 17), which may be added to the place-names of Hertfordshire.

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to be executioner, are described with cruel details. Amphibalus, according to William, escaped by Alban's help to Wales, preaching to Welshmen, Picts and *civēs*; a thousand men accompanied him to the West, of whom 999 were slain by the persecutors. Amphibalus was brought back to Verulamium for his martyrdom, many were converted again, and another thousand were put to death. The origin of this immense number of martyrs can be recognized with probability. The Martyrologium Hieronymianum on 22 June (*Acta sanct. Nov.* II, 2, p. 330) mentioned martyrs of Antiochia—Julian, two others and 879 more—whose names God alone knows. The apostle Jacobus Alphaei and the martyr Rufinus of Alexandria follow next, but then the large number of unknown (Antiochian) martyrs is repeated, one of the many fatuous repetitions by which the very archetype of the Martyrology was deformed. This time the number (which is more or less disfigured in some copies) is 889, by the addition of an x. Now in the second recension of the Martyrology (BW), which took place in the 7th century in Gaul, the name of the British martyr was entered immediately after Rufinus of Alexandria: *In Brittania Albini martyris*. The 889 martyrs who had joined Rufinus by the mistake of repetition, were made companions of 'Albinus' in turn by the queer insertion of his name;³¹ only a c and another x had to be added to arrive at 999. This might be the origin of the large number of martyrs in William's Passion; the other thousand men may be an invention without any base, or may be the thousand men who, according to Gildas (above p. 349), followed Alban through the river.

There is no need to dwell on all the fables of the 'translated' author, who pretends to have made careful inquiries at Verulamium (§ 2), and to have written down his knowledge before starting for Rome to be christened there, and to offer his book to the Romans for examination (§ 47). He prophesies the coming of Christian missionaries to Britain who will learn from his writing God's great deeds worked through the martyrs, and will propagate them. He is conscious of extolling the glory of St. Alban, whose merits will be praised all over the world, *si quid mea carmina possunt* (§ 47): everybody knowing Vergil (*Aen.* ix, 446)—there were many in the 'Renaissance of the twelfth century'—might have compared at once Alban and Amphibalus to the friendship of Nisus and Euryalus immortalized by the poet. But the author meant not only literary glorification of his heroes; one

³¹ cp. Delehaye, '*In Britannia*' dans le *Martyrologe Hiéronymien* (loc. cit. 300 f.)

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of his objects was the 'invention' of relics of Amphibalus, the whereabouts of which were hidden as yet, as had been his name a generation before. Amphibalus's terrible sufferings have ended, the pagans are engaged in quarrel and uproar (§ 44): *quidam fidelis in Christo clam beati martyris corpus auferens sub terram occuluit diligenter, quandoque ut confidimus divino munere in lucem proferendum*. Was it William's aim to prepare the discovery by laying the literary foundations?

Archaeologists now might help to make alive the written word. There must have been some knowledge of two ancient mounds, *tumuli*, containing human remains, at Redbourn four miles northwest of St. Albans on Watling Street. What is told of this cemetery, shows, as G. Baldwin Brown has seen,³² that a burial-place of the pagan period of the Anglo-Saxons existed there: modern methods might perhaps find more of it.* Visions seen by Robert, a citizen of St. Albans, are said to have suggested searching the place; miracles followed as soon as the digging had begun; after some days of work, when the brethren were sitting in the refectory listening to a recital of William's *Passio*, a message came that the bodies of Amphibalus and of three companions and of six others nearby had been discovered, on the 25th June 1177 (not 1178). They were brought to the abbey, a solemn procession with St. Alban's shrine moved to meet them; very soon a precious shrine of St. Amphibalus found its place in the abbey-church near that of St. Alban, and contributed to make St. Albans 'the most brilliant' of the English monasteries in the later Middle Ages.³³

Monastic and popular imagination discovered more. In the marshy grounds near the Ver there existed a little church of St. Germanus (now St. Germain's farm), which was said to have been built in the time of abbot Eadfrid (about 900?) for a hermitage. The name of the patron-saint caused the story that Germanus had stayed in a house at

³² *The Arts in Early England*, 1915, III, 120 f.; cp. Baring-Gould and Fisher, loc. cit. I, 153. On Redbourn see M. Reddan, *Vict. Hist. Hertfordshire*, IV, 416 ff.; cp. II, 364 ff.

* It seems most probable that the human remains found at Redbourn consisted of secondary burials in a pre-existing (Roman or earlier) barrow, as at Dunstable; and I have already marked the site as such on the Ordnance Survey 'Dark Ages' map. Primary Saxon barrows were normally either very small—in which case they occurred not singly or in pairs but in large groups set close together, as in many Kentish cemeteries—or else they covered primary cremations. The fact that Redbourn stands right on Watling Street makes it probable that the barrow was of the Roman period.—O.G.S.C.

³³ V. H. Galbraith, *The Abbey of St. Albans from 1300 to the Dissolution of the Monasteries* (Oxford 1911), p. 3.

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this place, when he visited the martyr's tomb in 429 and took not only dust from it (above p. 347) but raised the very body of the saint (*Gesta abb.* I, 20 f.). The monks knew also where Alban's relics were preserved after the 'invention' of 793, until the abbey-church of Offa was finished: in the middle of the 13th century the chapel of 'Sancta Syon' was said to have given them shelter in the meantime. Where had the 999 companions of Amphibalus suffered in returning with him from Wales? A popular etymology of the name of Lichfield gave to this town the fame of having seen the massacre of the crowd. In accordance with medieval custom³⁴ William's *Passio* in prose was adapted to distichs by his friend Radulf of Dunstable (BHL. 212). About 1250 a French poem of similar contents was composed by Matthew Paris, where the converted executioner also got his name, Heraclius (*Aracle*).³⁵ But the legend of the saint himself was growing. William had spoken of Alban's noble Roman descent, but had not told his former life—fiction had to fill this gap. The 'primacy' (*primatus*) of Albion under the Caesar was ascribed to him; now he got a military career.³⁶ The poem of John Lydgate on SS. Albon and Amphibale composed in 1439 for abbot John Whethamstede, and the *Tractatus de nobilitate, vita et martyrio SS. Albani et Amphibali e Gallico in Latinum translatus* signify the culmination of this development, which need not be followed here, nor its expression in art.

But in the meantime the monks of St. Albans by chance had touched the very heart of their original church; here again archaeological research perhaps might be able to supply the deficiencies of our knowledge. The eastern part of the church had to be pulled down for

³⁴ E. R. Curtius, 'Dichtung und Rhetorik im Mittelalter' (*Deutsche Vierteljahrschrift für Literaturwissenschaft und Geistesgeschichte*, 1938, xvi, 435 ff).

³⁵ ed. R. Atkinson, *Vie de seint Auban*, 1876; partly *Illustr.* pl. 1-30. The Latin form Heraclius is given by John of Tynemouth, *Nova Legenda Anglie*, ed. C. Horstman (Oxford 1901), I, 33.

³⁶ *Inventio Albani* in Dublin ms. fol. 52-52 v, *Illustr.* pl. 32, 33; cp. Usserius, *Britannicarum Ecclesiarum Antiquitates*, Dublin, 1639, 981 (London, 1687, 83; *Works of James Ussher*, ed. Elrington, v, 190). The same 982 (83; 191) prints a text calling Alban *magistrum militum totius Britanniae*, which is said to be taken from *libro, quem Dominus Iohannes Mansel specialis Domini Regis clericus et consiliarius attulit de Hispania*; a part of the text relies on Geoffrey of Monmouth. The reference seems to depend on Dublin ms. fol. 22, cp. Atkinson p. vii, xii. On John Mansel, the famous counsellor of Henry III, who died in 1265, see Kingsford, *Dict. of Nat. Biogr.*, xxxvi, 84 ff. He was sent to Castile in 1253 and 1254, and came to St. Albans with the queen in October 1259. The French poem v. 21 (Atkinson, p. 3) calls Alban *de la cité un haut maréchal*.

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restoration and extension some years after the middle of the 13th century. In demolishing the walls and in testing the strength of the foundations, the workmen discovered, near the old feretory under the pavement on the 2nd day of January (*in octavis S. Stephani*) 1257 a 'mausoleum' with a tomb of stone. It was thought to be the first place of rest of St. Alban; a leaden inscription suggested it, probably put there when the relics were removed to a shrine.³⁷ The interpretation may have been right. A martyr's tomb in old times was regarded with respect; its situation gave origin to the first *martyrium*, as well as direction to enlargement and rebuilding of the church, and when the custom of elevations and translations in the West also prevailed, there is some probability that the shrine with the patron-saint's relics was put in or above an altar at or near the same place, where the sacred bones were buried before under the pavement.

Now I resume the comparison with Bonn which I made in the beginning (p. 338). The present crypt of Bonn minster which is situated under the chancel, was built in the 11th and 12th centuries; but excavations of 1928-30 disclosed under it a Roman and Frankish cemetery, a Carolingian church and the original *martyrium* of the late fourth century. The foundations contained a large number of Roman inscriptions and sculptures, for the most part pagan dedication-stones of the 2nd and 3rd centuries. Roman Verulamium also is known to have been a quarry to St. Albans. At Bonn the *tumba* of the martyrs Cassius and Florentius was the 'heart' of the building through all its vicissitudes and changes even of the axis. Discoveries of the same kind were made in the northern part of the Rhineland at Xanten, where the fine church of St. Victor also has its place on a Roman cemetery outside the walls of the *Colonia Traiana*. By excavations of 1933 under the pavement of the Gothic chancel remains of older buildings were brought to light, which comprised a church of late Roman times and even the undisturbed bones of the martyrs. The question is whether the 'mausoleum' found in 1257 under the chancel of St. Alban's church is pointing the way to vestiges of Roman Christianity too. The inhabitants of medieval St. Albans had before their eyes the ancient ruins which they exploited. A writer of the abbey applied the celebrated verses of Hildebert of Tours on Rome to his own town: *O Verolanium, civitatis antique ruina potius quam edificium, felicior*

³⁷ See Usserius 986 (88; 202) from Dublin MS. fol. 70 v, cp. ib. 980 f. (77; 178); Matth. Par., *Chron. Maj.*, v, 608 f. 'It seems that there has never been an eastern crypt' at St. Albans (*Vict. Hist. Hertf.*, II, 484).

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*hodie in cun(c)tis nacionibus predicaris confracta, quam in deliciosis supellectilibus extiteris integra, que quanti fueris integra, rupta doces.*³⁸ Modern archaeological research has revived ancient Verulamium (Corder, above, 113-24), and Isca-Caerleon. The personalities of the martyrs Alban, Julius and Aaron will never be known. But they were objects of worship already in the fifth (429) and sixth (Gildas) centuries. Let us hope that the possibility exists, and that the opportunity will arise to bring to light some day at least the concrete evidence of this early devotion of a transitional period of British history in the Dark Ages.

³⁸ *Inventio Albani* in Dublin MS. fol. 55, Usseus 981 (83; 190), *Illustr.*, pl. 38; Hildebert's elegy may have been known to the author from William of Malmesbury's *Gesta regum* IV, 351 (ed. Stubbs II, 403); but it is also found elsewhere.

The Boat of the Dead in the Bronze Age

by L. V. GRINSELL

IN many parts of the world and at many periods the practice has prevailed of depositing boats, or models or other representations of them, with the dead, either as a means of facilitating his supposed voyage to another world, or as a symbol of his maritime activities during his lifetime.

That the former is generally the correct explanation of the custom there can be no doubt. This is shown by the evidence of the belief in a voyage to a future world, and the customs to which it has given rise, among living primitive peoples in the Pacific Islands and elsewhere, so well collected and presented by the late Sir J. G. Frazer.¹ It is shown also by traditions such as that of our own king Arthur's journey by barge to 'the island valley of Avilion, where falls not hail, or rain, or any snow'.² It is shown also by the ancient Greek and Roman custom of placing a coin in the mouth of the dead to pay Charon's fee for ferrying him across the Styx.

This belief may have been partly responsible for the well-known Viking ship-burials, of which those of Oseberg and Gokstad are the best known, but they may also be partly the result of the maritime leanings of the Vikings. The same may also be said of the Anglo-Saxon ship-burials from Sutton Hoo and Snape Common in Suffolk.³

The presence of a boat or representation of one buried with the dead does not necessarily prove any belief in a voyage to a next world: it may (like Elpenor's oar and the shepherd's tuft of wool) merely indicate the profession of the deceased.

There is little or no evidence of the boat of the dead before the Bronze Age.

¹ *Garnered Sheaves*, pp. 17, 20; *Fear of the Dead*, I, 183-7; *Belief in Immortality*, I, 244, 462.

² Tennyson, *Passing of Arthur*; cf. Malory, *Morte d'Arthur*, ed. H. O. Sommer (1891), I, 849.

³ *British Museum Quarterly*, Dec. 1939; *ANTIQUITY*, March 1940; *Antiquaries Journal*, April 1940.

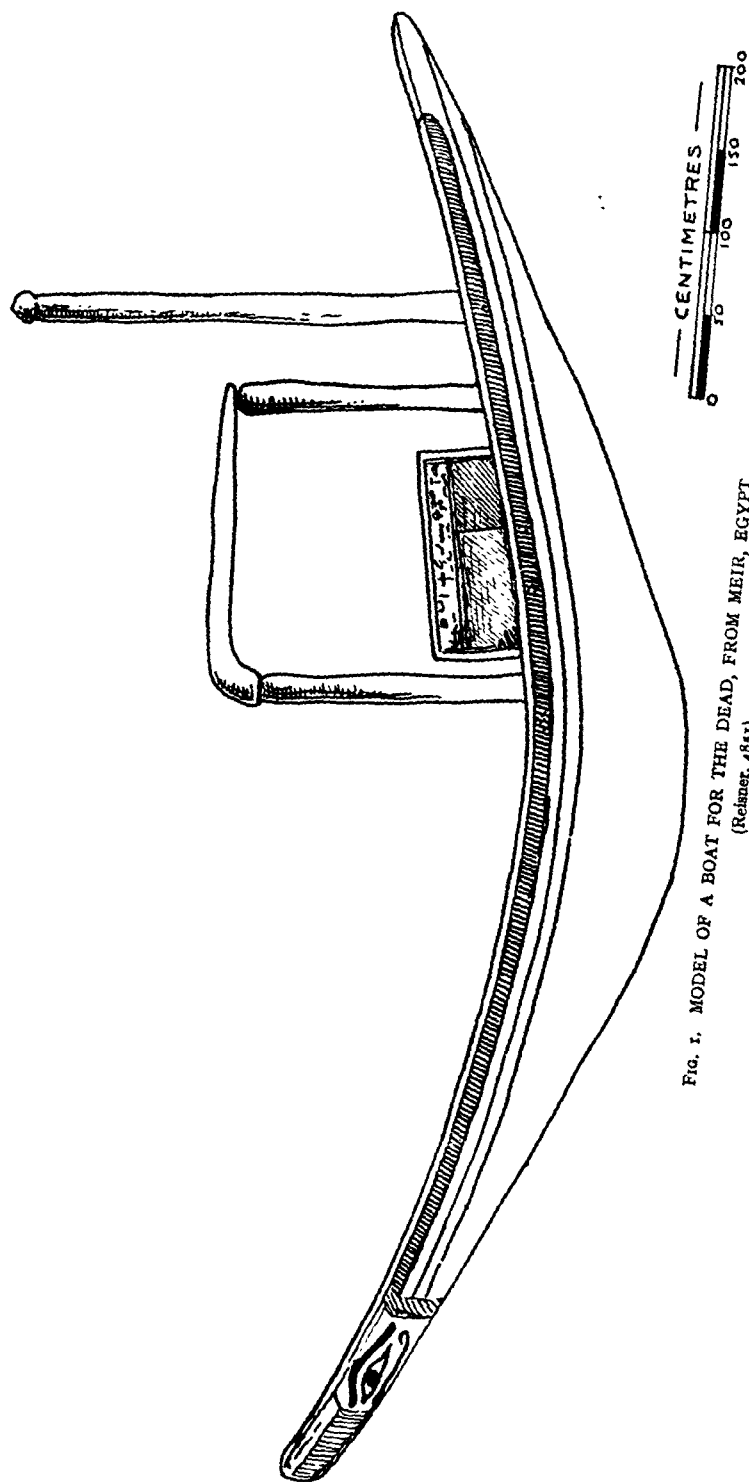


FIG. 1. MODEL OF A BOAT FOR THE DEAD, FROM MEIR, EGYPT
(Rehner, 4851)

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Perhaps the earliest record of a boat buried with the dead is that from the grave of A-bar-gi among the predynastic Royal Tombs at Ur of the Chaldees. In this grave were found two model boats, one (badly decayed) of copper, and the other (wonderfully well preserved) of silver, about 2 ins. long.⁴

In Egypt the practice of depositing boats with the dead existed from the 6th Dynasty onwards, and was flourishing *c.* 1600–1200 B.C., to which period most of the other Bronze Age boats of the dead appear to belong. Reisner⁵ divided model boats (FIG. 1) deposited with the dead into three classes according to function:—(1) for ordinary use of the dead in the next world; (2) for funeral use, i.e. to convey the dead to the next world; (3) solar boats used in the underworld. 'The funeral bark is probably derived directly from one of the types of divine barks of the period in which the funeral bark was first thought of. That period is, so far as can be seen from the reliefs and the dated models, not long previous to the 12th Dynasty. The characteristic mark of the funeral bark is the presence of a mummy on a bier, or a mummiform figure on a throne, or a coffin'.⁶ The solar barks were often placed in tombs, and originated from the idea of the sun making a journey by boat beneath the earth from west to east ready to rise the next morning.

Writing of the *Book of the Dead*, Sir E. Wallis Budge⁷ states that 'the recital of chap. 98 provided the deceased with a boat in which to sail over the northern heavens, and a ladder by which to ascend to heaven. Chapters 99–103 gave him the use of the magical boat, the mystic name of each part of which he was obliged to know, and helped him to enter the boat of Ra and to be with Hathor. Chapters 130 and 131 secured the use of the Boats of Sunrise and Sunset, and chapter 132 enabled him to return to earth and visit the house he had lived in'. FIG. 1 shows a typical Egyptian boat for the dead, containing a sarcophagus. The boat is of the usual type with the hull rising a long way out of the water at each end, and the oculi on the prow are also characteristic.

In Crete, we are faced with one of the most remarkable objects illustrating the religion and funeral customs of the Bronze Age, in the

⁴ C. L. Woolley, *Ur of the Chaldees* (1929), 50–52; *Ur Excavations II, Royal Cemetery* (1934), 71, 226–7.

⁵ *Models of Ships and Boats* (1913), II.

⁶ *ibid.* XXI, XXII.

⁷ *The Book of the Dead* (British Museum, 1933), p. 40.

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shape of the sarcophagus of Hagia Triada.⁸ This celebrated sarcophagus, the date of which is Late Minoan II-III (c. 1400 B.C.), has depicted on its four sides what can hardly be other than the funeral rites paid to the deceased. Although several points regarding the interpretation of details are in dispute, it is generally recognized that one of the sides contains a drawing of a man offering a boat to the deceased, who appears to be standing or kneeling in front of his tomb. It is considered that this drawing shows Egyptian influence.

Another example of the boat of the dead from Crete comes from Pit Cave no. 7, Zafer Papoura, Knossos, in which a small ivory boat was found⁹ with a Bronze Age inhumation. It is dated about 1500-1450 B.C.

There seems little evidence of the boat of the dead during the Bronze Age on the Greek mainland. It may however be noted that F. A. Paley,¹⁰ drawing attention to the probably oval plan of Homeric barrows, remarked on the fact that Homer here used the same word for oval (Τορνώσαντο, *Il.* XXIII, 255) as he used elsewhere when describing the shape of a barge. The following quotation from the *Odyssey* is also suggestive:—

‘ And when rose-fingered Dawn of Morning shone,
I sent my crew to Circe’s house to bring
The body thence, Elpenor that was dead ;
And quickly felling timber where a head
Ran out to sea, we made his funeral
Lamenting, and a heavy tear we shed.
But when the dead man with the arms he wore
Was burned, we heaped his grave-mound on the shore,
And reared a pillar over him, and fixed
Upon the topmost mound his shapely oar.’

Odyssey, XII, 8-15.

It is by no means improbable that the Greek idea of Charon ferrying the dead over the Styx may have come from Egypt. ‘Charon ferrying souls across the Styx is sometimes represented as having his

⁸ The classic paper by R. Paribeni is in *Monumenti Antichi dei Lincei* (1908), XIX, pp. 5-86; good English accounts appear in Evans, *Palace of Minos*, passim, esp. I, 437-41; M. P. Nilsson, *Minoan-Mycenaean Religion* (1927), 368-387; A. B. Cook, *Zeus* (1925), II, 516-25. A well-executed facsimile of the sarcophagus is in the Ashmolean Museum.

⁹ A. J. Evans, *Prehistoric Tombs of Knossos* (1906), 25-7.

¹⁰ Homeric Tumuli, in *Proc. Cambridge Phil. Soc.* (1866), XI, 272-3.

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head turned round so as to look over his shoulder just as the ancient Egyptian ferryman of the dead did'.¹¹

I have found no evidence of the boat of the dead in the Italian Bronze Age, but boats are depicted on Early Iron Age grave-slabs from Novilara, and sun-emblems dating from the end of the Bronze Age have been found at Bologna.¹² There appears to be no evidence of the boat of the dead in the Bronze Age in Spain or Portugal.¹³

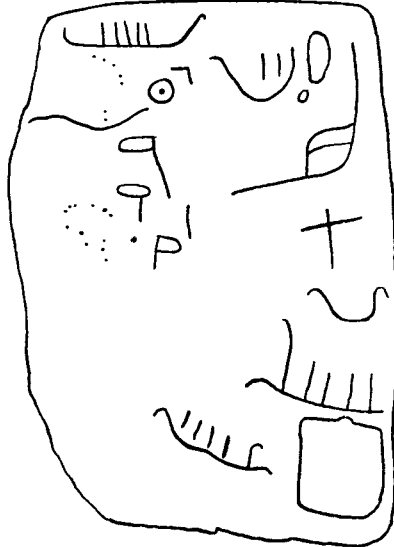


FIG. 2. MANÉ LUD, MORBIHAN, SOUTH
BRITTANY, SLAB NO. 1
after Péquart and Le Rouzic

From France comes some slight evidence from rock-carvings in some of the megalithic barrows in southern Brittany, especially one of the slabs from Mané Lud, Morbihan (FIG. 2), among the figures on which appear three probable boats, each with a crew of five. Another slab from the same barrow presents a possible boat, and yet another of the slabs a probable solar emblem. 'Le presence du "Soleil" sur

¹¹ *The Sacred Boat*, by Dr M. D. W. Jeffreys (unpublished paper for the loan of which I am indebted to Prof. Canney).

¹² Montelius, *Civil. primitive en Italie*, I, ii, 366; II, i, pl. 143; *Monumenti Antichi*, v.

¹³ Works searched included Bosch Gimpera, *Etnologia de la Peninsula Iberica*, 1932, and earlier works by Cartailhac, Aberg, and Pericot y Garcia.

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le support no. 2 pourrait peut-être servir d'argument décisif et emporter la conviction que les gravures sont bien des représentations de "barques" symboliques et non de "signes cornus" ou "jugiformes".¹⁴ Other possible boat-carvings on megalithic barrows in Brittany are from the Dolmen de Couëdic, the Dolmen de Kerveresse, and Ile Longue,¹⁵ but they look more doubtful than Mané Lud.

Although England contains no known sepulchral rock-carvings of boats, it has yielded some boat-shaped hollowed tree-trunk coffins from Bronze Age barrows. Loose Howe in north Yorkshire is reported to have contained 'three dug-out canoes, two of which were used as

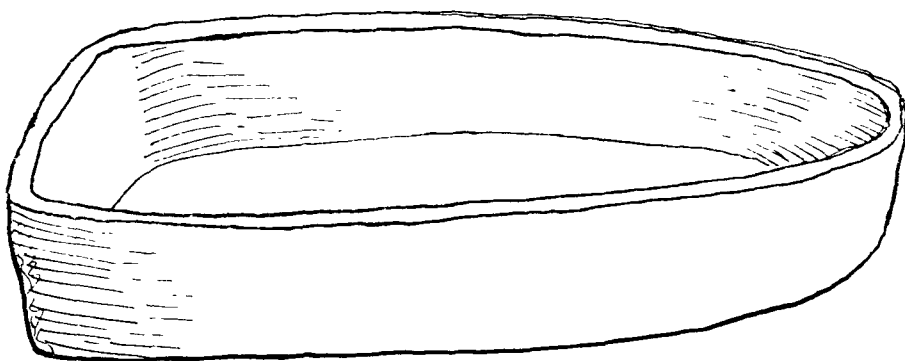


FIG. 3. OAK BOAT-SHAPED COFFIN FROM SCRUBBITTY BARROW 9, DORSET
Pitt-Rivers Excavations, II, pl. 87

a coffin and its cover'.¹⁶ Near Beverley in east Yorkshire was found a boat-shaped wooden coffin (date uncertain) containing fragments of human bones.¹⁷ Other possible dug-out canoe-coffins from Bronze Age barrows in Yorkshire, among the least doubtful of which is Gristhorpe, have been described by Elgee.¹⁸ A barrow near Winterbourne Stoke, Wiltshire, opened by Hoare, contained an Early Bronze Age skeleton 'within a shallow case of wood, of a boat-like form',¹⁹ and

¹⁴ Péquart and Le Rouzic, *Corpus des Signes Gravés*, 1927, pl. 44-51, p. 66.

¹⁵ loc. cit. pl. 11, 12, 62-4, and pp. 61-66.

¹⁶ *British Museum Quarterly*, 1937-8, XII, p. 150; Hawkes, *Foundations*, 1940, p. 366.

¹⁷ T. Wright, *Celt, Roman and Saxon*, 4th edn., 1885, p. 373.

¹⁸ *Early Man in N.E. Yorks*, 1930, 73-5; *Arch. Yorks.*, 1933, p. 65.

¹⁹ *Ancient Wiltshire*, I, 124-5.

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certain other dug-out coffins from barrows in the same county may have been boat-shaped.²⁰

In Scrubbit barrow ix, northeast Dorset, a boat-shaped wooden coffin (FIG. 3) was found by Pitt-Rivers containing a cremation.²¹ It is by no means improbable that the wooden coffin from the barrow at Hove, Sussex, may have been boat-shaped.²² Two similar canoe-coffins have been found recently by Daryll Forde in a barrow near Plynlimmon, Cardigan, Wales,²³ one of them being associated with a food vessel of Irish type.

From Scotland there comes a doubtful boat (FIG. 4, A) carved on a Bronze Age cist-slab in a barrow at Ri Cruin, Kilmartin, Argyllshire.²⁴ In the same cist was another slab on which were carved axes of Early

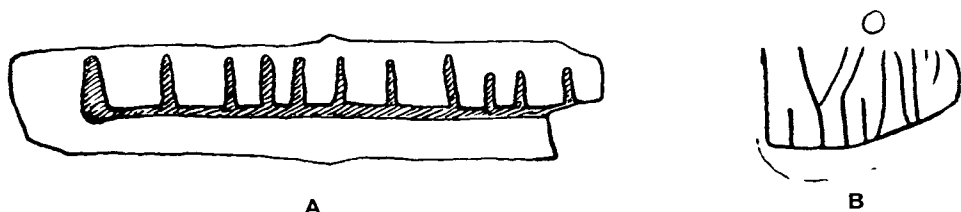


FIG. 4

(A) INCISED SLAB FROM CAVE AT RI CRUIN, ARGYLLSHIRE
(B) ENGRAVED SLAB, NEW GRANGE

Bronze Age type. It is not certain whether the Ri Cruin boat-shaped figure was intended to represent a boat or whether it is one of those 'pectiform' figures which the Abbé Breuil has shown from Spanish examples to have been often derived from animal-forms.²⁵ I incline to the latter view.

Ireland affords doubtful examples of boats among her fine incised chambered barrows,—one from New Grange (FIG. 4, B) and one from Dowth (Coffey, *New Grange and Other Incised Tumuli in Ireland*, 1912, figs. 7 and 40), and perhaps one from Loughcrew.²⁶ Although accepted as ships by Coffey and others they have been rejected by

²⁰ *Proc. Prehistoric Soc.*, 1941, shortly to appear.

²¹ *Excavations*, II, pl. 87.

²² Curwen, *Arch. Sussex* (1937), 162; *S.A.C.*, LXXV, 265 (66 SW. no. 1).

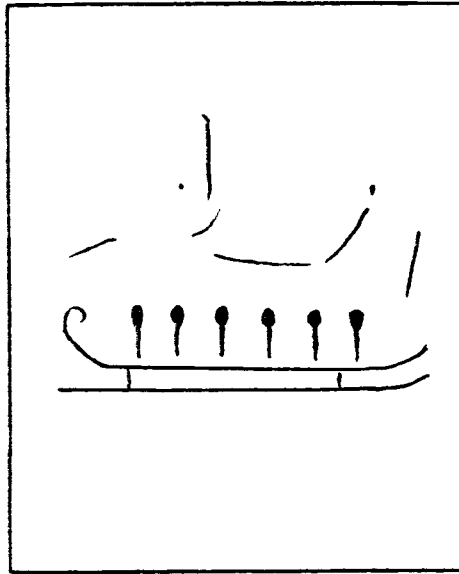
²³ *Ant. Jour.*, XIX, 90; Childe, *Prehistoric Communities* (1940), 130.

²⁴ Childe, *Prehistory of Scotland* (1935), pl. XI, p. 115.

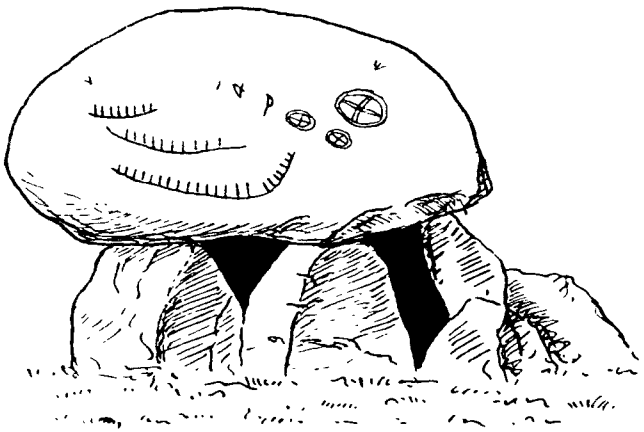
²⁵ Breuil and Burkitt, *Rock-Paintings of Southern Andalusia* (1929), p. 9.

²⁶ *American Anthropologist*, 1923, XXV, 387-96.

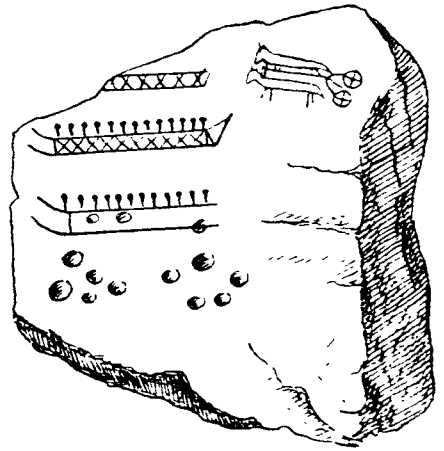
THE BOAT OF THE DEAD IN THE BRONZE AGE



A



B



C

FIG. 5

- (A) INCISED STONE SLAB FROM CAIRN AT KIVIK, SCANIA, SWEDEN, *after* Simpson and Almgren
 (B) BURIAL CHAMBER WITH INCISED CAPSTONE, GREVINGE, ZEELAND, *after* A. E. Holmberg
 (C) INCISED STONE SLAB FROM BARROW AT VILLFARA, SCANIA, SWEDEN, *after* Simpson

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Breuil (P.P.S.E.A., 1934, VII, 321) and apparently also by Mahr (P.P.S., 1937, 355), while Almgren is not sure about them (*Hällristningar*, 1927, fig. 129). The circle just above the (?) boat from New Grange (FIG. 4, B) may be a sun-disc. Whether these Irish figures represent boats, pectiform designs, or other things, the close relations between Ireland and the Iberian peninsula during the Bronze Age should be borne in mind when interpreting them.²⁷

The celebrated gold model boat from the Broighter find was unconnected with any burial.²⁸

We now come to the most important and perhaps most interesting of all the Bronze Age evidence of the boat of the dead,—that afforded by some of the Scandinavian sepulchral rock-carvings. It should however be noted that most of the Scandinavian rock-carvings of boats are on open rock surfaces unconnected with barrows.

The celebrated Kivik barrow on the coast of Scania, contained a long cist of 8 slabs of which 7 had engravings. On one of these was a boat (FIG. 5, A) and another contained a carving of what may be a boat but is probably a sledge. The whole series is well dated by the presence of drawings of Early Bronze Age axes on one of the slabs. On two of the other slabs are probable sun-symbols (wheeled crosses). Although details of interpretation of this series of carvings are very difficult, there can be little if any doubt that they represent the funeral rites of the dead.²⁹ Another important Swedish example is from a barrow at Villfara, Scania, the grave-slab having drawings of three boats, one of which is drawn over cup-and-ring markings which are therefore earlier. There is also a chariot of a type similar to that appearing on one of the Kivik slabs (FIG. 5, C). Perhaps the most significant of all is the capstone of the burial-chamber from Grevinge,

²⁷ See e.g. Bosch Gimpera, 'Relations Préhistoriques entre l'Irlande et l'Ouest de la Péninsule Ibérique', *Préhistoire*, 1933, II.

²⁸ See E. C. R. Armstrong, *Cat. of Irish Gold Ornaments*, 1920, pp. 26-9, 95-7.

²⁹ The original account, *De Monumento Kivikensi*, by Sven Lagerbring, 1780, is extremely rare in Britain, but there is a copy in the Bodleian. Lagerbring's drawing of the boat slab is hardly recognizable as a boat. A. E. Holmberg, *Skandinaviens Hällristningar*, 1848, discusses Kivik at length (pp. 139-45) and illustrates the boat slab (Tab. 44). In *British Archaic Sculpturings*, 1867, Sir J. Y. Simpson illustrates the complete set of slabs fairly well but his interpretation differs in some details from that now generally accepted (pp. 84-90, pl. 32). Good modern accounts are in J. Brøndsted, *Danmarks Oldtid*, II, 105, 115, passim; O. Almgren, *Hällristningar och Kultbruk*, 1927, chap. IV, and in *Fornvannen*, 1938, pp. 3-5, which contains a photograph of the barrow. The incised slabs are in the National Historical Museum, Stockholm.

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Zeeland (FIG. 5, B), on which are depicted at least three boats and three sun-discs, their association on the same slab recalling the well-known boats of the sun in Ancient Egypt. In this connexion we may recall the find of 100 model gold boats from Nors, Denmark, some of which are engraved with sun-symbols.³⁰ A probable Norwegian example came from a cairn called Mjeltehaug in Giske parish, Romsdal district, in 1878, along with several other incised slabs, one of which contains what appears to be a sun-disc.³¹ Although most of the well-known Scandinavian ship-graves (*skeppssättningar*), consisting of stone slabs arranged in the form of a ship, are known to belong to the Early Iron Age, a few of them go back to the Bronze Age.³²

The connexion of the boat of the dead in Scandinavia with sun-emblems suggests the possibility of a derivation, probably indirect, from Egypt, and this is supported by other evidence of contact between Scandinavia and the Aegean in the Bronze Age. We have already seen that the Hagia Triada sarcophagus was inspired by Egyptian influence, and in any case the diffusion of some elements of Bronze Age culture from Egypt to the Aegean is a commonplace of modern prehistory.³³

As long ago as 1895 Montelius stated a case for the spreading of some elements of Bronze Age culture from Mycenae to Scandinavia.³⁴ Among the evidences of contact between the Bronze Age cultures of the Aegean and Scandinavia we may recall the similarity in the use of spirals as a decorative motif;³⁵ the probable derivation of the Nordic stone double battle-axes from the Mycenaean double-axe;³⁶ evidence of trade in amber,³⁷ and the finding of a Mediterranean shell in a

³⁰ For Villfara and Grevinge see Sir J. Y. Simpson, loc. cit. pl. 31, pp. 82, 90; a better illustration of Grevinge is in Holmberg, *Skandinaviens Hällristningar*, 1848, Tab. A-B, fig. 24, described in pp. 79-80. For Nors see Shetelig, Falk and Gordon, *Scandinavian Archaeology* (1937), 155-6; Brøndsted, *Danmarks Oldtid*, II, 173-4.

³¹ *Bergens Museums Aarbok*, 1912, no. 4.

³² e.g. one from Halland is figured in Almgren, *Sveriges Fasta*, 1934, fig. 85.

³³ See H. R. Hall, *Civilisation of Greece in the Bronze Age*, passim.

³⁴ *Les Temps Préhistoriques en Suède*, 1895, pp. 62-3, 132; cf. E. de Lange in *Bergens Museums Aarbok*, 1912, no. 4, p. 36.

³⁵ Shetelig, Falk and Gordon, *Scand. Archaeology* (1937), 131-2.

³⁶ Hawkes, in *Annual of British School at Athens*, 1940, XXXVII, 141-59.

³⁷ For maps of probable amber routes see de Navarro in *Geog. Jour.*, 1925, LXVI; Bosch Gimpera, *Etnologia de la Peninsula Iberica*, fig. 204.

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barrow at Hvidegard near Copenhagen.³⁸ Shetelig however has stated³⁹ that 'no articles from the Mycenaean area are ever found on Scandinavian ground', and from this we should infer that the contact was indirect.

Dr Almgren has stated that the Kivik carvings are slightly later in date than the Hagia Triada sarcophagus.⁴⁰ This supports the view that the idea of the boat of the dead may have reached Scandinavia from the Aegean and ultimately from Egypt. Prof. Gordon Childe has indeed suggested⁴¹ that the Bronze Age shipbuilding of Scandinavia may have been largely due to the arrival of mariners from the Aegean.

As for Brittany and southern England, these areas and the Aegean were by no means strangers in the Bronze Age, and it is possible that here also the Bronze Age idea of the boat of the dead may have been derived from the Aegean. Examples on the northeast coast of England, such as Loose Howe and perhaps Gristhorpe, suggest possible contact with south Scandinavia or north Germany; but the presence at Loose Howe of a pin of Aunjetitz type and a stone double-axe⁴² indicates that even if the immediate influence was central or north European, the ultimate influence here also was Aegean.

³⁸ Montelius, *Temps Préhistoriques en Suède* (1895), 132.

³⁹ *Scandinavian Archaeology* (1937), 132.

⁴⁰ *Hällristningar och Kultbruk* (1927), 327.

⁴¹ *The Bronze Age* (1930), 52.

⁴² Childe, *Prehistoric Communities* (1940), 125, 130.

The Rabbit and the Hare in Wales

by COLIN MATHESON

THE rabbit shares one characteristic with the archaeologist—both dig into the earth. Hence the latter, contemplating some object or evidence revealed by his spade, may sometimes be viewing merely the result of the activities of a humbler but much more numerous type of excavator. Is he not warned to ‘always make sure that an apparent post-hole is not a rabbit- or rat-hole’?¹ And does not Professor James Ritchie describe the rabbit as ‘a burrower and a vandal which makes short cuts through the neat layers and classifications of the excavator’?² On the other hand, the rabbit’s activity or lack of it may on occasion be of service; it was a long patch of virgin turf on Easton Down, untouched by rabbits or moles, which led Dr Stone in 1932 to remove the turf, thus revealing a layer of tightly packed flint nodules covering a Bronze Age urn-field. Hence no apology, we feel, is needed for an article on the rabbit in a journal primarily concerned with archaeological research; particularly as much of the article deals with the status of the rabbit in medieval times, a topic which has already figured briefly in *ANTIQUITY*.³

The main facts about the history of the rabbit in the British Isles have been set out so adequately by other writers, e.g. by Barrett-Hamilton and Hinton in their *History of British Mammals* and by Professor Ritchie in his *Influence of Man on Animal Life in Scotland*, that all we need say is that the rabbit, in the opinion of most zoologists who have studied the matter, was introduced to England from France by the Normans, and that there is no satisfactory evidence of its existence in England before the thirteenth century. A letter from Mr Reid Moir in *The Times* five years ago, querying this view, gave rise to some interesting correspondence,⁴ including a letter from Mr M. C. Harman, who

¹ *Notes on Archaeological Technique* (Oxford University Archaeological Society), p. 19.

² *The Influence of Man on Animal Life in Scotland*, p. 247.

³ 1936, pp. 364, 462-3.

⁴ See *The Times* of 6, 7, 23, 28 May 1936.

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quoted a deed referring to Lundy Island and preserved among the muniments of the city of Exeter, that provides what is apparently the oldest written reference to the rabbit in this country ; though undated, this deed must have been drawn up before 1234, and may even be a little before 1200. As regards actual remains, the midden at Rayleigh castle (11th-13th centuries) is, according to Hinton, the oldest of the post-Pliocene deposits in Britain from which contemporary bones of rabbit have been obtained.

Subsequently the multiplication of the rabbit in England was so rapid that Gesner in 1551 commented on the 'copia ingens cuniculorum' in that country : though even in much later times its distribution appears to have been irregular, some districts having practically none. Thus Pringle wrote in 1797 of Westmorland,⁵ that 'a few rabbits are kept in the neighbourhood of Brough and Orton, and there is a small warren in Ravenstondale, but it is rare to see them in any other part of Westmorland'; today it is almost impossible to find any area in the county without rabbits. In Scotland there are records almost as early as in England, and by the sixteenth century or earlier the rabbit was numerous in several parts ; but there are many Scottish districts where it was almost unknown as late as the beginning of the nineteenth century. In the present article it is proposed to trace the story of the rabbit in Wales, a subject which has not received much attention from previous writers. Some of the early records I have noted elsewhere,⁶ but much additional data has been obtained from both published and unpublished sources.

The first record of the rabbit in Wales dates from 1282, when a payment of 3s 6d was made to Richard le Forester for catching rabbits for the king's use and for keeping the king's ferrets at Rhuddlan castle in Flintshire.⁷ About the same date (1284) the commote of Estimaner (comprising the modern parishes of Towyn, Penal, Llanfihangel y Pennant, and Talyllyn) in Merionethshire had to pay 8 shillings for the upkeep of a rabbit-warren (*haracium*), each house, ninety-six in all, paying one penny.⁸ In 1376 there was a warren at Castle Kerdyf

⁵ *General View of the Agriculture of the County of Westmorland* (Newcastle, 1797), p. 332.

⁶ *Changes in the Fauna of Wales within Historic Times*, and 'Notes on Domestic and Wild Animals in Montgomeryshire' (*Montgomeryshire Collections*, 1933).

⁷ *The Antiquary*, 1911, p. 302.

⁸ *Archaeologia Cambrensis*, 1884, pp. 276-8.

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(Cardiff),⁹ and in 1492 we read of one on the Flat Holm, a small island in the Bristol Channel near Cardiff.¹⁰ For long after these dates the rabbit seems to have remained mainly or entirely coastal in distribution in Glamorgan, for the Elizabethan historian Rice Merrick, writing in 1578, gives the list of rabbit-warrens in the county as follows:—Llandaf, Barry Yland, Mynidd Glew, Wyke, Wenny, Morgan, Britton Fery—all on or close to the coast.¹¹

On the Welsh islands at the mouth of the Bristol Channel the rabbit was also numerous at an early date—in a Pipe Roll of 1325–6 we have on the receipts side the following: carcasses and skins of rabbits caught in the islands of Schalmey, Schokolm, and Middelholm, £13 12s 0d, and on the expenditure side: stipend of 3 ferreters 12s 3d; sundry expenses as follows: salt for the aforesaid rabbit carcasses, thread for rabbit nets, boards, nails and cord for the boat used in the said islands, 3s 2d. In 1387–8 a total of 3120 carcasses was obtained from the three islands, of which 2318 were sold, 540 used as food for the ferreters, and 262 as food for two ferrets; in the preceding year the catch of 3000 skins was valued at £11 9s 2d. Other items which figure in the accounts for 1387 are shovels (*vangas*) for digging out rabbits, barley and cooking utensils for the ferreters, etc.¹² North as well as South Wales apparently did a considerable trade in rabbit-skins, for at Conway a man named Ieuan lost in Glyndwr's rebellion 2400 skins stored in a bark-house there.¹³

On the Pembrokeshire mainland, in 1517, the Prior of Pill granted a forty-year lease of property including a rabbit-warren, to Morris Butler, the Prior and Convent reserving to themselves the right to hunt in the warren three times a year.¹⁴ George Owen of Henllys, writing of Pembrokeshire at the close of the sixteenth century, specially mentions the numerous rabbits on the islands, but says of the mainland simply that several gentlemen had good warrens of conies.¹⁵ In North Wales also we find the islands mentioned as the homes of numerous conies, by John Leland, writing about 1540 of St. Tudwall's

⁹ *Cardiff Records*, edited by J. H. Matthews, I, 152.

¹⁰ *ibid.* p. 175.

¹¹ *A Booke of Glamorganshires Antiquities*, edited by J. A. Corbett, p. 113.

¹² Cymmrodorion Record Series no. 7, *Calendar of Public Records relating to Pembrokeshire*, I, 62–3, 68, 80, 103–6, etc.

¹³ E. A. Lewis, *Medieval Boroughs of Snowdonia*, p. 192.

¹⁴ Emily M. Pritchard, *History of St. Dogmael's Abbey*, pp. 145–6, 150–1.

¹⁵ Cymmrodorion Record Series no. 1, 'The Description of Penbrokeshire', pp. 111–3, 268.

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Island, St. Dwynwen (Llanddwyn) in Anglesey, and Hilbre Island on the Cheshire side of the Dee estuary.¹⁶ Thomas Pennant, during his tour in North Wales about 1773, remarked on the presence of rabbits on Puffin Island and the Skerries, both off the Anglesey coast; and noticed also the 'vast and profitable warren' of Sir Pyers Mostyn, at Talacre on the Flintshire coast, noted 'for the delicacy of the rabbits, by reason of their feeding on the maritime plants'.¹⁷

While future research may reveal some records of early Welsh warrens inland, the forgoing, which include every record before 1800 that has come to the writer's notice over a number of years, all indicate a coastal distribution (see FIG. 1). This is in full accordance with the statement by Walter Davies (1813) that in the interior of North Wales there were then 'but few rabbits', but that in the sandy places round the coast, where the soil favoured their burrowing, they were numerous.¹⁸

It has been supposed that in the Edinburgh district, the presence of the rabbit in various localities from early days was due to its introduction by the inmates of the monasteries, and Davies's reference to the abundance of rabbits around the ruins of Llanddwyn Monastery, also the lease of a warren by the Prior of Pill, suggests that in Wales likewise there may often have been an association between monastery and warren.

In any case the position, as indicated by our survey, is that rabbits were common on the islands round the Welsh coast long before 1800, and were also preserved and well established in various private warrens on estates on the mainland coast; but elsewhere were either few or absent. Other stray indications point the same way. There is for example a (unpublished) note in the diary of L. W. Dillwyn that in 1840 a troop of polecats swam the Ogmere River, in Glamorgan, to get at Talbot's warren (presumably at Margam); this suggests that rabbits were not then very common in some much nearer places where they are today abundant. Similarly, it is suggestive that Pennant, though he refers to the warren at Talacre, omits the rabbit from an annotated list of 32 species of mammals inhabiting the Flintshire parishes of Whiteford and Holywell no great distance away.¹⁹

¹⁶ *The Itinerary in Wales of John Leland in or about the years 1536-1539*, edited by Lucy T. Smith, pp. 53, 88, 92.

¹⁷ *Tours in Wales* (1810 edition), III, pp. 39, 69, and II, p. 113.

¹⁸ *General View of the Agriculture and Domestic Economy of North Wales*, p. 347

¹⁹ *History of the Parishes of Whiteford and Holywell*, p. 144.

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Barrett-Hamilton and Hinton remark of the rabbit that 'It may . . . be successfully introduced on islands in regions where it could not

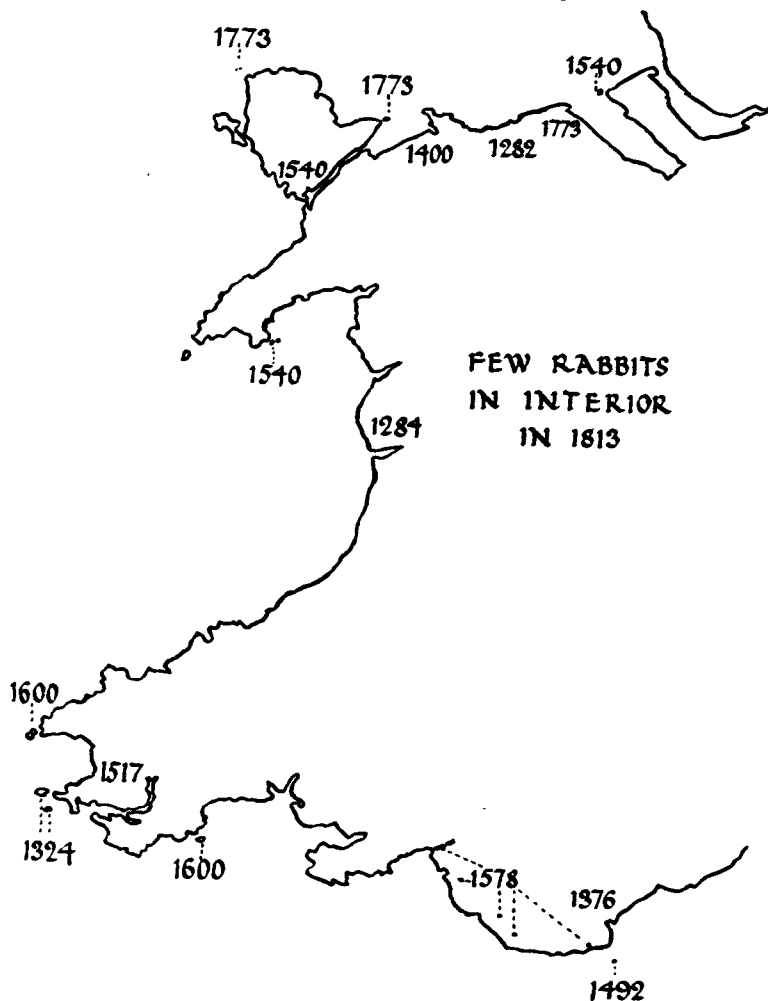


FIG. 1. KNOWN PUBLISHED RECORDS OF THE OCCURRENCE OF THE RABBIT IN WALES UP TO THE BEGINNING OF THE NINETEENTH CENTURY (ONLY THE EARLIEST DATE BEING QUOTED FOR ITS OCCURRENCE IN EACH LOCALITY). IT SEEMS EVIDENT THAT THE ANIMAL WAS CONFINED TO THE COASTAL DISTRICTS, AND WALTER DAVIES, AS LATE AS 1813, COMMENTED THAT THERE WERE FEW IN THE INTERIOR OF NORTH WALES

be established on the adjacent mainland, and this is characteristic of it everywhere throughout its range'. One factor in this phenomenon

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is that large carnivores are usually absent from small islands, which do not provide the food supply and other conditions necessary for them to flourish. Bearing in mind the wild wooded nature of much of the Welsh mainland in early days, and the presence in numbers of beasts of prey²⁰ ranging in size from the wolf to the weasel, it is not surprising that the rabbit, however it might flourish under protection in the coastal warrens, did not spread over the countryside generally.²¹ So too in the north of Scotland, although the city of Aberdeen is stated to have had its own warren on the links as early as the fifteenth century, rabbits were not familiar in the adjacent area of Buchan until well into the nineteenth century.

The multiplication of the rabbit then in the inland districts of Wales was subsequent to the year 1800. To this multiplication several causes contributed, though not necessarily the same causes operating in Scotland. There, the marked increase in the rabbit population was, according to Professor Ritchie, contemporary with and in large measure caused by the notable advances in agriculture, culminating in 'the golden age of British agriculture' subsequent to 1853. Though in North Wales the rabbit was, according to Davies, scarce in the interior at the beginning of the century, yet by 1885 it was possible for an estate-owner and his shooting party to account for 5086 rabbits in one day on a Merionethshire estate.²² That this increase, however, had much connexion with agricultural developments is at least doubtful. It is true that at the close of the eighteenth and the beginning of the nineteenth century considerable progress was made in arable farming in North Wales, but this appears to have come to a halt soon after the close of the Napoleonic wars. When the House of Commons Committee on agriculture made its report in 1821, wheat cultivation was on the down-grade in Wales and much land had gone out of tillage altogether; and parliamentary blue books of the 'thirties reported that Welsh farming capital was steadily declining.²³ In South Wales, as

²⁰ For example, I have given in *The Bulletin of the Board of Celtic Studies*, May 1940, pp. 177-87, particulars of wild cats, foxes and ravens destroyed in a Merionethshire parish in the early years of the eighteenth century.

²¹ In the Annual Report for 1892-3 of the Nilghiri Game and Fish Preservation Association, under the heading 'Exotic and Introduced Game' we read 'The game-watcher reports that he occasionally sees Rabbits, but they have probably scattered and are not likely to increase very fast in such a vermin-infested district as Kartéri.'

²² J. G. Millais, *Mammals of Great Britain and Ireland*, III, 53.

²³ A. H. Dodd, *The Industrial Revolution in North Wales*, pp. 50-2

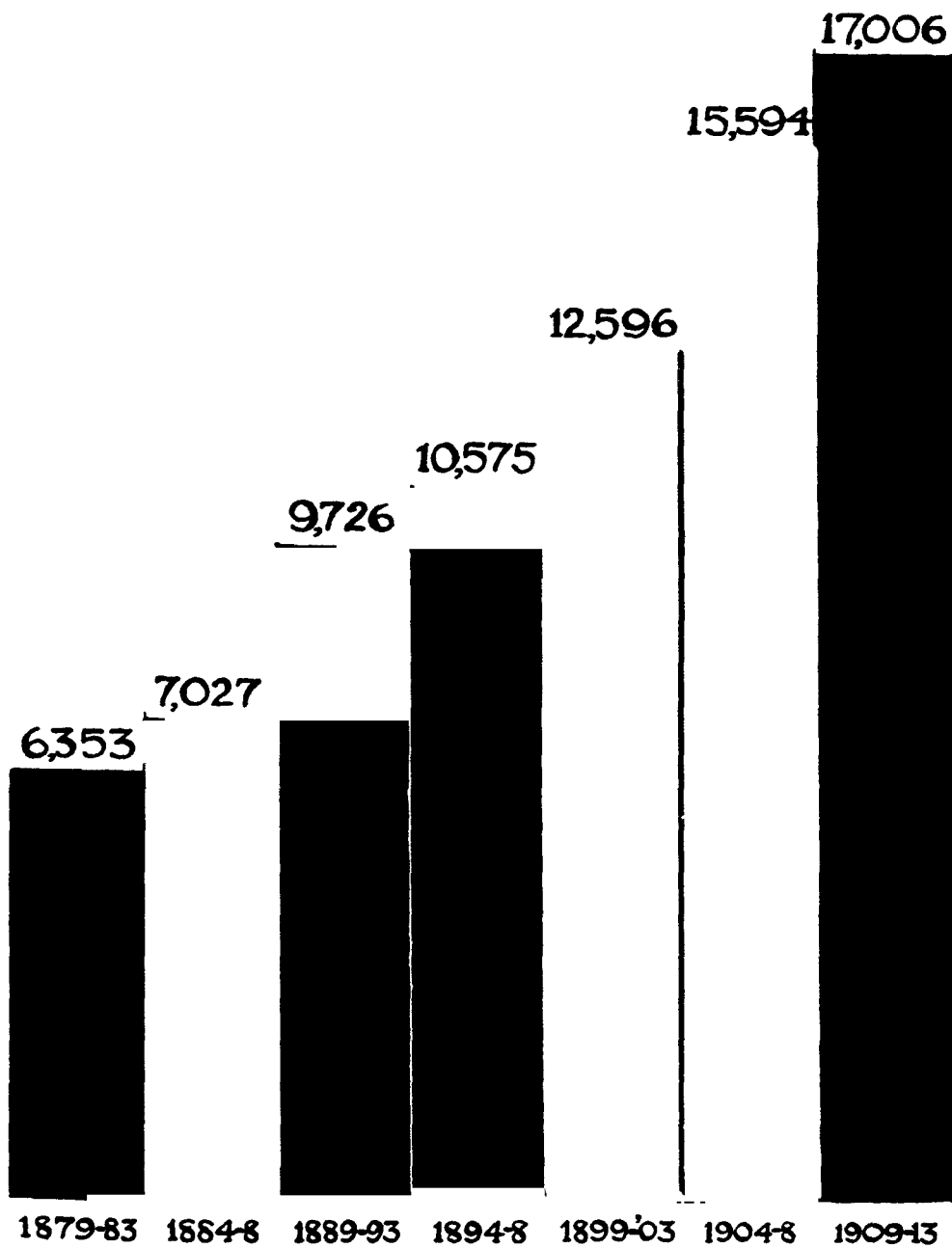


FIG. 2. DIAGRAM SHOWING INCREASE IN THE NUMBER OF RABBITS SHOT ON AN ESTATE IN SOUTH WALES, IN EACH FIVE-YEAR PERIOD FROM 1879 TO 1913

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the industrial revolution developed, there was, particularly after 1841, a rural exodus to the iron and coal producing valleys of the southeast, accompanied by the decay of many industries which had supplemented the earnings of agriculture.

The increase of the rabbit therefore would appear in most parts of Wales to be due to other factors than agricultural progress. Among these was the deliberate turning-down and preserving of rabbits in districts where they were previously scarce ; various instances of this are noted in the report of the Royal Commission on Land in Wales,²⁴ published in 1896. With the introduction and preservation of the rabbit, and (about the same period) of the pheasant, went the systematic destruction by the gamekeeper of beasts and birds of prey—wild cats, polecats, falcons, etc. One example, though rather late in date, may be mentioned—between 1874 and 1902, on an estate near Bettws-y-coed, 1988 kestrels were killed.²⁵

In several parts of Wales, during a great part of the century, the increase of the rabbit was associated with, and perhaps partly responsible for, a marked decrease in the numbers of another rodent once common, the brown hare. In our further discussion of the rabbit therefore these two phenomena may conveniently be dealt with together.

The hare in Britain antedates the rabbit by about 1300 years in its appearance in the literary field, since Julius Caesar refers to it as indigenous to our country, and states that the natives considered it impious to eat it. Later, in Wales, it was associated with various superstitions which may on occasion have tended towards its preservation. Pennant quotes a Montgomeryshire legend associating the hare with St. Monacella, who founded an abbey on the spot where she saved a hare from the hunters. 'Till the last century, so strong a superstition prevailed, that no person would kill a hare in the parish ; and even later, when a hare was pursued by dogs, it was firmly believed that if anyone cried "God and St. Monacella be with thee", it was sure to escape'.²⁶ According to the tenth-century Welsh laws attributed to Prince Hywel Dda, the hare changed its sex every month.²⁷

But the hare was nevertheless a favourite beast of the chase ; in

²⁴ pp. 503, 511.

²⁵ H. E. Forrest, *The Vertebrate Fauna of North Wales*, p. 246.

²⁶ *Tours in Wales* (1810 edition), III, 173-4.

²⁷ A. W. Wade-Evans, *Welsh Medieval Law*, p. 225.

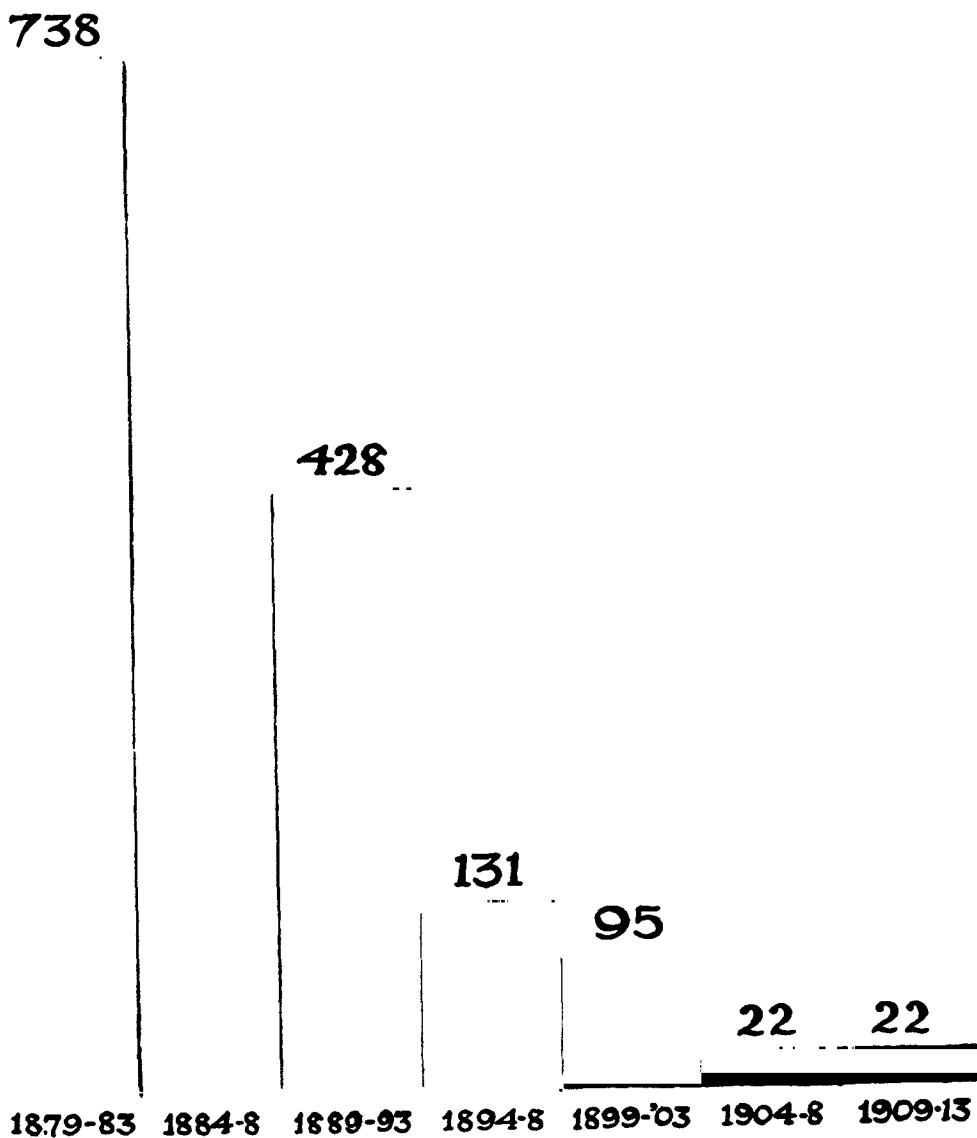


FIG. 3. DIAGRAM SHOWING DECREASE IN THE NUMBER OF HARES SHOT ON AN ESTATE IN SOUTH WALES (THE SAME ESTATE AS IN FIG. 2) IN EACH FIVE-YEAR PERIOD FROM 1879 TO 1913

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Y Naw Helwriaeth (The Nine Huntings), a text generally considered as embodying the hunting customs of the early Welsh, the hare was one of 'the three hunts with shouting', and its flesh was regarded, like that of the stag, the boar and the bear, as a special delicacy.²⁸ And George Owen wrote of Pembrokeshire in the reign of Elizabeth that no county in England contained more hares, 'in such number neere vnto woodes and covertes, that the neigheighbours corne is by them greatly endamaged, and I haue knowne in my tyme a husbandman, that rose often nights out of his bedd, to chase awaye the hares from his corne, so much harme he founde by their feedinge'; one man by tracing in the snow would kill sixteen or seventeen in a morning, 'yett is their encrease such as noe man feeleth grieffe or perceaveth wante. Therefore this beaste affordeth sufficiente pastyme to hunte with the houndes and chase with grayhoundes, and manye places of this sheere is litle or noethinge inferior for plentye to the speciall warrens of hares preserved in manye partes of Englande'.²⁹ Somewhat later Lewis Morris, writing of Llanbadarn Fawr and Aberystwyth, remarked that 'The diversions of ye gentry are chiefly cock-fighting and coursing, hares being very plenty'.³⁰

In several parts of Wales the abundance of the hare, once characteristic of every county, is now a thing of the past. The causes of this are various—increase of industrialization and concomitant increase of population had probably much to do with it in counties like Glamorgan. The Ground Game Act of 1880, allowing tenants to shoot hares and rabbits, may also have been a factor of importance in various districts. Forrest, in 1907, noted that since the passing of the Act the hare had become scarce or vanished altogether from districts where it was formerly common;³¹ and in a game-book kindly lent me by an estate owner in Brecknockshire, a record of 77 hares shot by five guns on 2 December 1875, has a footnote added by the owner later, 'This was the largest number of hares ever killed here in a day. It is hard now, since the passing of the Hares and Rabbits Act, to find one'. The increase of the rabbit, it can hardly be doubted, was another factor, for that rodent had by this time become too numerous to be affected much by the provisions of the Act, and the destruction and fouling

²⁸ Matheson, *Changes in the Fauna of Wales within Historic Times*, p. 85; see also I. C. Peate in *ANTIQUITY*, 1934, pp. 73–80.

²⁹ Owen, *op. cit.* pp. 265–6.

³⁰ See *Archaeologia Cambrensis*, 1938, p. 26.

³¹ Forrest, *op. cit.* p. 57.

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by numerous rabbits of the grass on which the hare feeds has apparently reduced the numbers of the latter in many parts of the country.

FIGS. 2 and 3 provide a striking illustration of the difference in status between the two species, which is applicable in greater or less degree to several parts of Wales. Both figures refer to the same estate in Glamorgan; for the quinquennial period 1879-1883 the gamebooks show a total of 738 hares shot, which decreased to 22 in the period 1909-1913; the rabbits recorded for 1879-1883 numbered only 6353, which had risen in the 1909-1913 quinquennium to 17006. Neither the decrease nor the increase is a purely natural biological phenomenon; thus, the owner to whom I am indebted for these statistics remarks that the estate 'became increasingly subject to trespass and disturbance, owing to increased population, new works and collieries from about 1890 onwards, and it is disturbance in particular which hares dislike', while with regard to the rabbits he mentions that 'from about 1895 it became the custom to preserve rabbits for the gun in certain enclosed areas and this . . . accounts for the increased numbers shot'. But the increase had in any case, as is clear from our figure, been going on for long prior to that date;³² and for ANTIQUITY, which is concerned with human activities rather than those of animals, one could hardly find a more interesting example of the results of man's actions on the fauna around him.

The influence of animals and other environmental factors on human history, and the recoil upon man of his experiments with the animal life around him, is a theme with endless ramifications. Dr Wheeler in his *Prehistoric and Roman Wales*, after mentioning among others the well-known theory that the inroads of the malarial mosquito were responsible for the decline of ancient Greece, remarks sadly, 'All these suppositions may be true. But the clay is sometimes a little heavy about our boots'. But the story of the rabbit is not too heavy to be devoid of interest to the student of human activities; and little clay will adhere to the boots of the student who follows its early history in Wales, since, as Davies tells us, its original haunts were 'on the sea-coasts, where the sandiness of the soil favours their burrowing'.

³² The increase of the rabbits is in fact illustrated for this estate by statistics going back as far as 1859, though these have not been utilized in the text figure because strictly comparable statistics are not available for the hares. The numbers of rabbits recorded for the earlier years are:—1859-63, 1009; 1864-8, 5085; 1869-73, 3935; and 1874-8, 3775.

Notes and News

SOIL ANALYSIS

The following note on 'Soil analysis and the Location of sites of ancient Habitations' is reprinted from the *Geographical Review* by permission of the American Geographical Society of New York. In connexion with this subject we refer to the notes (translated) by Walter von Stokar on soil chemistry ('Prehistoric organic Remains') in *ANTIQUITY*, 1938, XII, 82-6.

The experiments of O. Arrhenius, a Swedish soil chemist, have, during the past decade, opened up a new and unique method for searching out the location of places inhabited by ancient man. While engaged in the mapping of soils in Sweden, Arrhenius discovered certain anomalies in the areal distribution of phosphoric acid that could not be satisfactorily explained on any pedologic basis. His data had already clearly shown that the amount of phosphoric acid in the soil was appreciably greater in areas that were the sites of agricultural villages than in the surrounding fields. In the course of his further research, he found that this close correlation persisted even where the villages had long since disappeared, even, in fact, to Stone Age settlements!

The principal elements by which the soil of a settlement is enriched are nitrogen, potash, magnesium, lime, and phosphoric acid. Except in regions having a dry climate, the nitrogen, potash, magnesium, and lime concentrations will in time largely disappear. The phosphoric acid, however, either in an insoluble state (phosphate of lime or phosphate of iron) or through colloidal absorption, will remain in the soil and even a long time after the village has vanished, will bear witness to its former existence. The technique of measuring the P_2O_5 in the soil in relation to human habitation has been perfected to the point at which not only can the sites be located through its abnormal occurrence but it is possible to estimate the number of people that have lived at a particular place and the length of time they lived there.

Perhaps no other single experiment more clearly demonstrates the preciseness of this method developed by Arrhenius than its use in the location of ancient routes of travel. Although less waste accumulates

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along a road than in a village, his data reveal the position of old paths of communication and the shiftingness of their location.

As the work of Arrhenius has been carried on exclusively in Sweden, a question has arisen concerning the value of his method when applied in regions with vastly different types of climate and soil. The recent investigations of E. M. Castagnol and Paul Lévy in Indochina have proved that the technique is valid in the laterite soils of that country (E. M. Castagnol, 'Méthode d'analyse du sol appliquée à la recherche des emplacements anciennement habités', *Inst. Indochinois pour l'Etude de l'Homme, Bulletins et Travaux*, vol. II, 1939, pp. 191-203; 'Note de M. Paul Lévy', pp. 202-3). After performing several field experiments, Castagnol reports that 'the results obtained at Tonkin confirm those of Arrhenius in Sweden, and it seems that this method of searching for sites of ancient habitations can be applied as well to tropical regions as to temperate'.

The value of the method in tropical lands may be readily appreciated. In such a region as Indochina, where ordinary construction materials are largely wood, mud, and straw and where both the temperatures and the humidity are high, it is possible for even very large ancient settlements to disappear completely. They can now be located without information obtained by extensive excavation or documentary evidence relating to their existence. The ability to define the old lines of communication, now long non-existent, and to trace them to the ancient population centres to which they led greatly simplifies the search for the records of ancient man and results in a considerable economy in both time and money.

MONUMENTS OF ORKNEY AND SHETLAND

The 'Inventory of the Ancient and Historical Monuments of Orkney and Shetland', of which publication was imminent at the outbreak of war, is now accessible to the public. A set of paged proofs has been placed in the National Library of Scotland in Edinburgh, where it may be consulted by anyone who calls there for that purpose. In order to ensure so far as possible that, if the stock of printed sheets should be destroyed, a copy may yet survive, six other sets have been distributed in as many different places regarded as relatively safe; these, however, are not accessible to the general public.

The Inventory accompanies the Commissioners' twelfth report. It represents the work of years by several trained archaeologists in a region particularly rich in ancient sites and ecclesiastical monuments.

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CONNEXIONS BETWEEN EGYPT AND RUSSIA

Some years ago Sir Flinders Petrie claimed that there were definite connexions between ancient Egypt and southern Russia, more particularly with the Caucasus; but as his opinion was based entirely on literary and philological evidence archaeologists have been slow to accept it. Archaeological evidence in support of that claim is, however, coming in by slow degrees, and it seems probable that in time the evidence will prove that the founder of the science of Archaeology was right in his conjecture.

I bring forward now two pieces of evidence in support of his claim; the first is literary and pictorial, the second is purely archaeological.

(1) As I have already published the first in full detail (*Ancient Egypt*, 1934, p. 115) I merely give a summary here. The name of the god 'Ash occurs five times in the inscriptions of Egypt, and in four of the five it is evident that he is of foreign origin. He appears first on the sealings of wine-jars of the 11th dynasty (Petrie, *Royal Tombs*, II, pl. xxii, 178, 179; pl. xxiii, 199, 200), where he is shown in connexion with vineyards. In the 7th dynasty he is called 'Lord of Tehennu', i.e. the Land of the Olive-tree (Borchardt, *Sahurê*, p. 17, abb. 11). In the 8th dynasty he is mentioned in an unintelligible passage in the Pyramid Texts of king Pepy. In the 18th dynasty (c. 1500 B.C.) his name occurs in chapter xcv of the Book of the Dead in a rain-charm, 'I am the Terrible One in the thunderstorm. I am refreshed by this 'Ash'. The connexions with the vine, the olive, and with rain, give plain indication that this is not an indigenous god in Egypt, but his actual provenance can be demonstrated with some certainty. A representation of him in the 26th dynasty (c. 600 B.C.) depicts him with three heads (FIG. 1), a lion, a snake and a vulture; his name is written beside him, 'Ash of many faces'. Here again he is obviously foreign, for no indigenous Egyptian god is multiple-headed. In Sebastian Münster's *Cosmographia Universalis*, published in 1545, there occurs the picture of a three-headed god which must surely be the same as the god 'Ash, for the heads are those of a lion, a snake and a vulture (FIG. 2). Though Münster calls them the heads of a lion, a toad, and an eagle, a comparison of the two representations shows that they are as similar as it is possible to be, allowing for two different styles of art. The 'eagle' has the feathering down the back of the neck, a characteristic of the Egyptian vulture; the 'toad' is copied from the snake's head; in both examples the band showing the edge of the mask



FIG. 1. ASH OF MANY FACES
From a coin in the Brighton Museum



FIG. 2. A SCYTHIAN DEITY



FIG. 3. SOUL-HOUSE, SHOWING STOVE, WATER-POTS, AND WOMAN
GRINDING CORN (3-5)

Ph. T. A. G. Strickland

PLATE II



FIG. 4. FRAGMENT OF SOUL-HOUSE
SHOWING STOVE (3:5)



FIG. 5. POTTERY FIGURINE, SIDE (3:4)

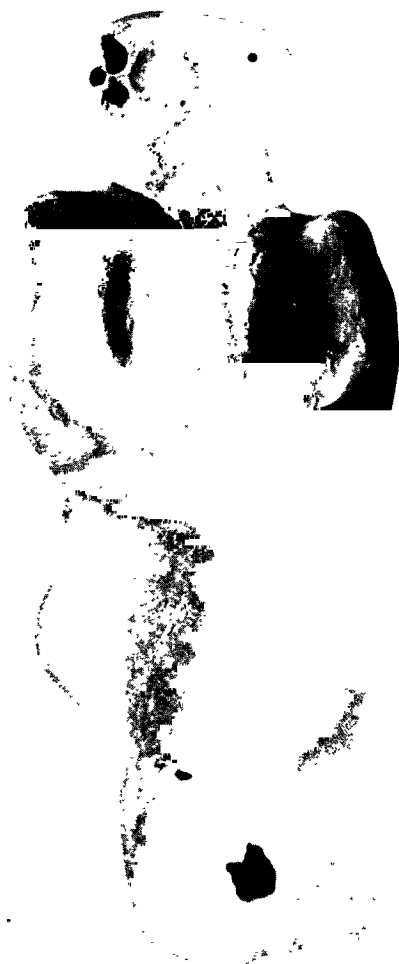


FIG. 6. POTTERY FIGURINE, FRONT (3:4)

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worn by the human impersonator of the god is clearly indicated ; and in Münster's picture the figure wears a loin-cloth, a unique feature in a European representation of a 'demon'. My point here is that Münster states in so many words that this deity was called up to advise Marcomir, king of the Franks, when that monarch and his tribe were still in the land of Scythia.

(2) My second piece of evidence is entirely archaeological, and again points to a connexion between southern Russia and ancient Egypt. Among the finds of the Tripolye culture found on a site on the Dnieper are the two objects illustrated here. The first is of a pottery tray (FIG. 3), which in many ways so closely resembles the pottery soul-houses of the XIIth dynasty that there seems no reasonable doubt as to the relation between them. In the Russian example the tray has a surrounding wall with an opening in front, at the side are water-jars and the figure of a woman kneeling to grind corn at a saddle-quern ; all these features are the same in both Egypt and Russia.* Petrie has shown that in Egypt the soul-house developed from the simple tray to the complexity of a two-storied dwelling with furniture ; from which it is clear that soul-houses of that type either arose or were elaborated in Egypt. But the Russian examples show that the type had been long enough in Russia to evolve an essential feature of Russian life—the big stove at the entrance. Yet even this may be a modification, possibly a misunderstanding, of the miniature granaries found in the later Egyptian types. A fragment of another soul-house found on the same site (FIG. 4) indicates that the type was not unique.

FIGS. 5 and 6 are two views of a seated female figure in pottery, found on the same site as the soul-houses. This should be compared with the figures in Petrie's *Prehistoric Egypt*, pls. IV, 9 ; V, 4, 5 ; VII, 15, for figures leaning backward ; and pl. VII, 16, for a figure leaning forward. In both the Egyptian and Russian examples there is the same attitude with outstretched legs, the same beak-like face, the same treatment of the breasts, and where the arms occur in the Egyptian figures the position is the same as in the Russian. In the forward-leaning figure (Petrie, pl. VII, 16) there is the same extension of the buttocks, a detail which was probably necessary to keep the balance of the backward-leaning figure, but quite unnecessary in the Egyptian example. The dating of this Egyptian figure is interesting. Petrie

* Petrie, *Gizeh and Rifeh*, for wall with front opening, pls. XIV ; XXII, 60 ; for water-jars, pl. XXII, 60, 57 ; for woman grinding corn, pls. XVIII, 118, XXII central on right ; for granaries, XXII centre on left.

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dates it tentatively only by the shape of the boat in which it was found, but at the same time he says of a similar, though much rougher figure on the same plate, that he would date it to the XIIth dynasty by the pottery.

In the Russian figure the flattening of the back of the head, and the flattened excrescences pierced with holes at the sides of the head, representing ears pierced for earrings, are reminiscent of the pottery-figurines of women—usually called dolls—found in Egypt and dated to the XIIth dynasty, which are known to have a foreign origin.*

Judging by the archaeological evidence Professor Gordon Childe considers that 'on a short chronology the whole Tripolye development would lie within the limits of periods II to IV'. This would coincide with the XIIth dynasty of Egypt, a period to which soul-houses and certain types of female figurines belong. It was a time when Egyptian connexions were with the North. At present those connexions are known as being almost exclusively with Crete, probably because Crete has been well and scientifically excavated and other countries are still unexplored. The archaeological riches of ancient Russia are as yet almost untouched.

M. A. MURRAY.

SEA-TRADE IN EARLY TIMES—CHRONOLOGY

When writing my article 'Sea-trade in Early Times' (September, p. 233), divorce (by enemy action) from works of reference and the difficulty of visits to libraries induced me, after some hesitation, to rely (see note p. 240) upon R. H. Hall's chronology in the *Cambridge Ancient History* for certain dynasties of Ancient Egypt. My attention has been drawn to the fact that Hall's earlier dates are considerably higher than are warranted by recent research. His datings for VIIth and VIIIth Dynasty events should accordingly be reduced by about 400 years, and for the reigns of Sankhkere Mentuhotep and of Amenemhat II by approximately 200 years. Those of subsequent rulers which are quoted are not controversial and remain unaffected. For Babylonian history, following Mr Sidney Smith in *Alalakh* (1940), the dates for Manishtusu and Naram-Sin must be considered to be approximately rather less than 400 years in excess. The present tendency is to reduce considerably the long datings of the earlier dynasties formerly in favour both for Egypt and Babylonia.

JAMES HORNELL.

* J. Capart. *Recueil de Monuments Égyptiens*, pl. 66, on extreme left.

NOTES AND NEWS

ANTIQUITY (1942)

A year ago our editorial notes referred to difficulties caused by the War and the hope of retaining the support of our subscribers. Another twelve months have passed and it is some satisfaction to look back on our fifteenth volume, which is completed with the present number. Each of the four parts has been posted on the appointed day; and though we are aware of a difference between this volume and earlier ones, both in quantity of text and illustrations, it is somewhat an achievement to be still in existence and to have hopes of survival into better times.

Once more we thank all who have so valiantly helped us by remaining subscribers. Since the first spate of cancels we have not suffered as much as might be expected, and it is cheering to have received a modest number of new subscriptions. The real crisis will come next year—as it may in much greater affairs—but we mean to face both with determination. Everything depends on our present subscribers, and though we realize the pressure brought about by drastic taxation we derive confidence from the continued support of past years, and from the fact that it has been consistent for fifteen of them.

The greatest help which can be given is the early renewal of the subscription for 1942, for under present conditions we must have definite information as to the number of copies required. *Bis dat qui cito dat*. In every sense the 'tag' applies, for it means less paper, less postage, and a great saving of correspondence. It needs only this kind of help from subscribers (we do not forget those who already give it by using bank orders for payment) to keep the flag of ANTIQUITY flying for another year amidst the horrors of war.

The usual form is inserted for those whose subscription is paid direct to ANTIQUITY, 24 *Parkend Road, Gloucester*.

Reviews

THE PREHISTORIC FOUNDATIONS OF EUROPE TO THE MYCENAEAN AGE. By C. F. C. HAWKES. *Methuen*, 1940. pp. xvi, 414, 12 plates, 6 maps and tables, 27 text-figures. 21s.

Mr Hawkes is to be commended for a brave attempt to penetrate the outer crust of European prehistory and expose the core of historical truth which it encloses—and too often conceals—a theme to which he brings wide scholarship and a sympathetic understanding. His book is not designed as a text-book and it would not be fair to criticize it as such ; although not pursued quite unwaveringly the dominant aim is one of synthesis and interpretation.

Its scope makes it inevitable that the book will demand close attention, but it must be confessed that the author has not done all he could to render the task of the reader as pleasurable as it might have been. The standard of writing falls short of the theme. Certain faults of perspective arise from the fact that the author has not fully decided on the nature of his audience. While writing ostensibly for a public versed in the facts of prehistoric archaeology, he is never able to forget those, who, in need of instruction, peer into museum-cases. Possibly this is due to the origin of the book which, as the author tells us, grew out of a less ambitious handbook for visitors to the metropolitan museums. Whatever the cause, it has led to the inclusion of information which helps to clog the text without contributing to the high argument. The effect is not enhanced by the style which continues to be torrential without bearing the reader forward on a strong current. A friendly blue pencil to cut out the dead wood and break up some of those overweighted sentences and paragraphs would stand Mr Hawkes in good stead. Occasional flashes of brilliant writing serve only to tantalize. Until Mr Hawkes realizes that words, like coins, are debased by excessive multiplication his views will not achieve the circulation to which they are entitled.

In discussing the increasingly rich material available to the prehistorian Mr Hawkes emphasizes the part played in human life by non-rational motives, above all by the intense desire to increase social prestige. His treatment thus marks a reaction from the economic determinism which colours so much contemporary archaeological writing, lending it an air of reasonableness which it is often far from possessing. To the sociologist, indeed, whether he studies 'primitive' peoples or his more 'advanced' fellows, a strictly 'rational' interpretation of prehistory, in which individuals and peoples pursue their economic advantage in obedience to economic 'laws', must appear in the light of a travesty

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of historical truth. In so far as Mr Hawkes refuses to accept the view that reaction to environmental opportunity is the sole or even, necessarily, the main clue to the development of early cultures, his work deserves a warm welcome, although how far he succeeds in following out his chosen line is perhaps more open to question.

It may be that those who have made a special study of megalithic tombs will differ from Mr Hawkes on many points connected with the evolution and diffusion of the various forms, but in the opinion of the reviewer there is much that is stimulating in his approach to the problem as a whole. Resolutely refusing to treat them as something apart, he endeavours to appraise the significance of megaliths in relation to the early societies which gave them birth; he perceives that their role is neither 'economic' nor 'religious' in the modern sense of these terms, but rather a blend of the two. To illustrate the high level of writing which Mr Hawkes can reach in his happier vein, one cannot indeed do better than quote the brilliant passage where he writes of the megalithic religion that it:

'was to the main current of westerly trade and adventure a thing as vital as in its own way the Catholic religion was to the Spanish adventurers in the Indies, Mexico and Peru. Aegean religion and exploitation went hand in hand and we cannot doubt that superstition and the awe of great magic was an essential element in mercantile success.'

Equally to be praised is his emphasis on the role of the warrior conception of society during the later chapters of his story, an emphasis which manages to show through some really execrable writing.

In general one would like to commend Mr Hawkes' deep and lively understanding of the true dynamism of cultural history, in which the role of diffusion although important has not excluded the operation of other processes. Thus, in stressing the importance of the Mesolithic substratum for Neolithic and even for Bronze Age Europe, he gives due emphasis to the element of regional conservatism and continuity, an element which tended to grow in importance as settlement became more fixed. It has always been the reviewer's opinion that insufficient attention has hitherto been paid to this question. One reason for this is that the contrast between Mesolithic and Neolithic conditions has been greatly exaggerated, at any rate as far as northwestern Europe is concerned. The contrast between 'food-gatherers' and 'food-producers' is one that can easily be over-dramatized, especially when applied to the frontier zones of the ancient world. Consideration of food-habits, nature of settlement and even types of dwelling shows that there was a much broader community between the primitive hoe-agriculturists and food-gatherers of northwestern Europe than is always admitted. Particularly in the more backward parts of the continent, to

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which the new arts penetrated late and sometimes in enfeebled form, the Mesolithic pattern was sufficiently well fixed to influence subsequent developments.

Another subject of broad importance handled with insight and skill is that of the relations between Europe and the Ancient East. Mr Hawkes bears witness to the magnitude of the European achievement in recovering a lag of near 2000 years, and in creating a civilization with boundless possibilities of progress. The reason for the eclipse of the old culture-lands he traces to 'the hard mould of urban culture that kept [their] civilization static'. Europeans of recent generations have sometimes tended to forget what we owe to our farming days.

A general criticism of his treatment is that in his anxiety to achieve emphasis Mr Hawkes is sometimes inclined to stress details at the expense of the general picture. Thus, while he expatiates at length on pottery and other artifacts, he dismisses with a mere mention a phenomenon of such outstanding social and economic significance as Skara Brae. Indeed, one might go further and add that he endeavours to interpret European prehistory by a short cut. One may agree with him that economic history is not by any means the whole of history, while still insisting that sound history cannot be written without reference to an economic framework. The reviewer would go further and maintain that, if we are ever to learn how the pre-literate societies of Europe lived, we shall have to concentrate more upon the realities of their daily life and far less upon niceties of the potter's or metal-worker's craft, valuable as these may be for the preliminary work of sorting out the different cultural groups. One has only to compare Dr Bersu's masterly handling of the recent excavations at Little Woodbury with the conventional 'Report' and its meticulous treatment of trivialities (often expensively illustrated) to realize how deep is the gulf between those who aim direct at the conditions of life itself and those whose main preoccupation is with its trappings.

Of the illustrations one can say that they reach a standard higher than is sometimes found in archaeological works, although it is rarely that they pass the level of competence. Despite the trouble that has evidently been taken with the folding tables it can hardly be claimed for them that, like good diagrams, they appeal to the eye: to one reader at least it required a real effort of will to face the lettering. If the tables were more attractive one would have to complain that they are not more effectively referenced in the text. The bibliographical notes are better than usual and there is a full index. As a final word one may say that, while Mr Hawkes' book is not for everyone, it is emphatically a book to read if you would know what one of our leading prehistorians of the younger school is thinking. It is good to know that one who occupies a key position in British archaeology is as richly stored with learning as this book shows him to be.

GRAHAME CLARK.

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THE IBERIANS OF SPAIN AND THEIR RELATIONS WITH THE AEGEAN WORLD. By PIERSON DIXON. *Oxford University Press*, 1940. pp. XII, 160, 24 plates, 3 figs., map. 8s 6d.

Mr Dixon went to the Foreign Office already an Aegean archaeologist as well as a scholar and critic of the arts, and he devoted the spare time of his three years at Madrid before the Civil War to studying the history, archaeology and art of the ancient Iberians, and their Aegean relationships. This book is a miniature of a larger work which was stopped short in the printer's hands by the events of July 1936, and as such naturally abridges much detailed discussion and presentation of material, for which we must await that work's ultimate appearance. Meanwhile, what he calls 'the present abbreviated survey' conveys a faithful impression of fuller researches in the background, and is at the same time a well-planned whole with individuality of its own. This historical account of the Iberians passes over their earlier prehistory rapidly, but brings the reader to the Iron Age with a clear notion of the ethnic and cultural contrast between these 'Mediterranean' immigrants into southern and eastern Spain from North Africa—their still unelucidated language may be akin to Berber—and the Peninsula's older inhabitants, apparently known to ancient literature as Ligurians. The Celtic invaders who in the 6th century B.C. pushed across the Pyrenees into the centre and west provide of course a further contrast, which thereafter sharply defines the Iberian provinces proper, along natural inland frontiers. The Celtiberian regions of cultural overlap in the centre are really Iberianized Celtic, and their culture is here only indicated and not described; the possibility that the Iberian culture of Catalonia owes some of its provincial character to an earlier Celtic substratum, which Bosch-Gimpera believes was contributed by Urnfield immigrants about 900 B.C.,* might have been indicated also.

The upheavals of the late second millennium B.C. from the eastern to the central Mediterranean brought about an undoubted renewal of the Iberian sea connexions of Early Aegean times, but Mr Dixon does not believe that this led to the Phoenicians arrival and foundation of Cadiz until some three centuries after the traditional date of 1100 B.C., and he is sceptical of Schulten's account of Tartessos, regarding it as a region and not an Iberian capital at the mouth of the Guadalquivir. At any rate, Phoenician activities did little for Iberian culture, and it was not till the early 6th century that its great age began with the establishment of the first trading colonies by the Greeks. For it was to Greek influence that Iberian higher civilization was everywhere mainly a response, and even when at the beginning of the 5th century all Andalusia fell to the power

* Prof. Bosch-Gimpera's Rhÿs lecture on the Celts in Spain is due for publication by the British Academy shortly.

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of Carthage, Greek commercial and artistic currents continued to penetrate Iberian culture, there as well as in the more easterly regions where they could spread directly from the Greek trading posts founded meantime from Massalia. Of these the chief was of course Emporion, near the Pyrenean end of the eastern seaboard, the rise of which reflects the northward shift of Greek colonization in face of the Carthaginian advance and the results of the sea-battle with the Etruscans at Alalia in 535. Incidentally, one of those results may possibly have been actual Etruscan lodgments (by arrangement with Carthage) on the more southerly Iberian coasts. Needless to say, what attracted all these seafaring peoples was primarily the Peninsula's wealth in metals, which like the Romans after them they did all they could to exploit. Iberia was also exploited as a source of mercenary soldiery, on which Mr Dixon has an interesting chapter, reminding us incidentally that the famous Iberian sabre was modelled directly on the *machaira* of classical Greece.

To the archaeologist, the Iberians most striking response to Greek influence is undoubtedly their vase-painting, which Mr Dixon describes successively in the three main provinces of Andalusia, the southeast, and the east up to the Pyrenees. He well shows how reaction to late-archaic, east Greek, and later red-figured Greek work produced regional and period styles of marked individuality and character. The Iberian vase-painter was no mere copyist, and both in the universal linear, floral, or vegetal schemes which were his basic convention, and in the animal and human designs of the most developed southeastern and eastern styles, his taste and vitality maintain a strong native flavour. The vivid monsters of the Elche-Archena school, and the charming dance and battle scenes of the Liria vases, each show an art essentially decorative in purpose, which the figures, interspersed always with purely ornamental flourishes, never sacrificed to narrative or representational interest, while remaining in themselves delightful and vigorous. In sculpture, this Iberian bent for design rather than form showed itself in a choice of pictorially rich subjects like the elaborately apparelled priestesses of the Cerro de los Santos or the famous 'Lady of Elche', or such decorative beasts as sphinxes, lions, or bulls, with features apt for treatment by ornamental convention. The sculpture was originally painted, and particularly in the priestess statues, with their opulent ceremonial costume, head-dresses, and jewellery, forms an outstanding embodiment of real Iberian taste. Yet its inspiration was in origin Greek, as appears more clearly in some of the numerous bronze statuettes, from Despeñaperros and elsewhere, and Mr Dixon also illustrates some of the true Greek sculpture from the admirable Catalan excavations at Emporion.

In the ornaments (mostly of precious metal) of which they were so fond, the Iberians were much more strongly influenced by Phoenician and Carthaginian

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styles. Not much is known of their architecture, but they copied Greek methods of masonry and something even of the classical architectural orders, and in their funerary building the old idea of the chamber tomb emerged (with cremation) in the Iron Age in a form which seems very largely influenced by the tombs of the Etruscans. At their religious sites, originally natural groves or caves, temples of dry-stone masonry were occasionally built after the Greek fashion. Houses were built of dry-stone or clay-filled masonry or sun-dried brick, and by the 3rd century B.C. regular town-planning was developing, with fortifications of some complexity. Bastions of Greek type (as at Emporion) were used in the hill-fort defences of Mongó (see *ANTIQUITY*, 1929, III, 188-94).

The characteristics of Iberian culture seem to have succumbed very easily to Romanization, and contributed to nothing like the Romano-Celtic culture we know further north. But of the four centuries of their vital contact with the Greek world Mr Dixon has given us an excellent—and happily inexpensive—summary.

C. F. C. HAWKES.

SPANISH ROMANESQUE ARCHITECTURE OF THE ELEVENTH CENTURY. By W. M. WHITEHILL. *Oxford University Press*, 1941. pp. xxx, 307, 121 plates, 117 figs., 3 maps. £3 3s.

The interest and value of the early Romanesque architecture of Spain may, to a certain extent, be judged by the controversies to which it has given rise; controversies in which the foremost art-historians of France, Spain and America have taken part.

The first general survey of medieval architecture in Spain was due to Don Vincente Lampêrez, whose work, though produced as long ago as 1908, still remains an indispensable introduction to the subject. Dr Joseph Puig furthermore has dealt exhaustively with the Romanesque of Catalonia in a work which is never likely to be superseded. In the volume under review, the author, while covering the whole field, has confined himself to the earlier part of the full Romanesque style, but dealing, of necessity, with those 'first Romanesque' churches which preceded it, in the province of Catalonia.

Dr Whitehill acquired his first love of the subject under the late Professor Kingsley Porter, and his intimate knowledge of the buildings during a residence in the country extending over several years. The results of this love and this experience, aided by a very extensive knowledge of the documentary evidence, is now before us and we may congratulate the author on a production which is at once authoritative, complete and readable.

The recently published studies of M. George Gaillard have done much to resolve finally the long disputed dating of early Romanesque sculpture in Spain, and to assign its proper place alike to the acknowledged initiatory influence of

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France, and to the highly individual elements which were contributed by the Spanish people themselves. This book, we feel, should be read in conjunction with Dr Whitehill's, as our author relies largely on M. Gaillard's admirable illustrations to supplement his own equally admirable photographs.

Dr Whitehill deals first with the historical setting of his subject, passing on in the second part to the 'first Romanesque' of Catalonia (which covers the 11th century) and in the third part to the Romanesque of the other provinces of northern Spain. It will be a revelation to many to discover the extreme richness of Catalonia in little altered work of this period, not only in the major churches but also in the countless village-churches scattered over the countryside.

In some of the major buildings recent excavations have thrown an entirely new light on their structure and development. This is particularly true in regard to the abbey of S. Michel de Cuxa, S. Isidoro de León, and S. Domingo de Silos, though in the last case, unfortunately, the report has not yet been published.

Dr Whitehill deals exhaustively with the church and cloister of Silos and it is here, perhaps, that his conclusions will be read with the greatest interest. The long controversy over the dating of the various parts, and in particular over those of the amazing cloister and its sculptures, may well rest here, for Dr Whitehill states the evidence in a way which may be accepted by both parties as both reasonable and in accordance with the known facts. He does not however commit himself to an exact date for the work of the first (and greatest) master of the lower cloister, but places it between the years 1088 and 1158, with a personal inclination towards the earlier date. We feel that the more reasonable alternative is to place it after rather than before the Puerta de las Vergines, which is assigned to the first decade of the 12th century. The work is much more primitive in the doorway, and it is unreasonable to suppose that so great a master as he of the cloister should have had no influence on his immediate successors. Indeed we know that this was not so, as the influence of the first master is in fact sufficiently apparent in the work of the second master who worked on the cloister.

We have dealt at some length with this particular point as it is the most controversial in the book and the author does not himself express more than a preference.

Dr Whitehill's other sections deal with all the major and many of the minor examples of the country under review, and it is astonishing to be confronted with buildings such as the lovely ruin of S. Pedro de Arlanza, or the imposing fortress church of Loarre, which are still comparatively unknown. One is furthermore impressed with the early Spanish mastery of a style which was then a comparatively recent introduction into the country.

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The book can be thoroughly recommended not only to all students of Romanesque, but also as a full and masterly study of one aspect of the history of a people emerging from an age-long backwater existence into the full stream of European life.

We have referred above to the admirable photographic illustrations ; in addition the book is provided with an excellent series of plans and diagrams which incorporate all the latest information, and there is a full and efficient index. The production is in every way worthy of the Oxford University Press.

A. W. CLAPHAM.

THE SOCIAL AND ECONOMIC HISTORY OF THE HELLENISTIC WORLD. By M. ROSTOVITZEFF. *Oxford : Clarendon Press, 1941. 3 vols., pp. 1779 and 112 plates. £5 5s.*

To most people who have enjoyed a classical education, influenced directly or indirectly by the Oxford 'Greats' curriculum, the Hellenistic Age is a painful blank. The history of Old Greece after 323, and of the new domains won for Hellenism by Alexander, is treated at best as the background to certain episodes in Roman history. Yet the period is one of transcendent significance. In science for example it witnessed the culmination of Classical theory, the final absorption therein of the real achievements of Oriental mathematics and astronomy, and the crystallization of the tradition by which both have been transmitted to us through the Arabs and Byzantines. Its neglect is perhaps due to the lack of contemporary histories comparable in quality to Herodotus, Thucydides and the *Athenaion Politeia*, both as models of classical prose and subjects for historical criticism. In fact the most reliable documents on the period have not been inherited from the Middle Ages, but have been recovered by archaeologists' spades—inscriptions, papyri, town ruins, the actual products of applied science and the articles of international trade. These documents are abundant and often more illuminating than the texts of ancient authors. But they are widely dispersed and known only to a limited range of specialists.

Prof. Rostovtzeff's mastery of this material—particularly the least accessible, the papyrological—guarantees the value of his three imposing volumes. His personal familiarity with the relics from South Russia and with Russian literature can be used with exceptional felicity in just this period. As in the companion work on the Roman Empire, admirably selected plates, each faced by a page of explanatory text, both familiarize the reader with archaeology's contribution to history and enliven the narrative. Incidentally archaeologists working in quite different spheres will be indebted to the author for making available documents otherwise difficult to find, for instance the scene in a third-century corn mill on a Megarian bowl.

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At first sight the Hellenistic world presents an attractive aspect. Archaeology has laid bare and brought to life the Hellenistic cities ; Priene, Pergamon, and Delos are more fully known at this age than any classical city. With their well-planned streets, handsome public buildings and commodious dwellings all adorned with works of art, they look desirable abodes, and Rostovtzeff's plates do justice to their charms. We think of such *poleis* with all their amenities spreading to the Tigris and Susiana, indeed right to Turkestan and India. The scientist gratefully recalls the research institutes and schools of Alexandria, Pergamon and Cos, and the efflorescence of theoretical discovery unparalleled till the 18th century. No less respectfully do we admire the applications of theory in technical inventions, again comparable only to those of the 18th century—the donkey-mill, the water-mill, the Archimedian screw, glass-blowing (I can find no satisfactory evidence for the donkey-mill or any other application of rotary motion in milling before 300 B.C., despite the deductions of philologists to whom relics actually unearthed are evidently just embarrassments).

Rostovtzeff unfortunately has nothing to say of the Hellenistic Greeks' pure science, but as an archaeologist is appreciative of their technology. He even credits them with many innovations—not only in siege-engines, but even in road-building—usually regarded as Roman. The business letters recovered by papyrologists give an exciting picture of the enrichment of Egypt through the application of Greek agricultural science and Hellenistic mechanics to the Egyptian countryside in the planned economy of the early Ptolemies. Rostovtzeff even attributes to them the initiation of the iron age in Egypt ; 'so extensive a use of iron in Egyptian agriculture was almost tantamount to a revolution'. But at least in the cities iron had been fairly common since 663. If less radically, productivity must also have been greatly enhanced by the introduction of scientific agriculture in Asia.

Of course almost continuous wars and frequent piratical raids made life insecure and dissipated much wealth. But on the whole our first impression of Hellenism is a society as 'progressive' as that of 19th-century Europe. From our author the reader, familiar with earlier works, might then expect to read how the bright landscape was gradually overcast by the menacing shadow of a Rome whose sole native industry was usury.

Instead Rostovtzeff takes us behind the fair façade. With the aid of hints in petitions, royal edicts and private letters he gives us glimpses of the Egyptian 'natives', the peasantry on whose labour the prosperity of the Greek bourgeoisie and the leisure of scientists and artists in the cities were based. No doubt the legal status of the natives was bettered by the substitution of contractual obligations for the customary duties of pharaonic times. But perhaps the natives preferred pressure exercised by 'rulers who were their compatriots, who spoke

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their own language and had the same religion and mode of life ' to that of a ' bureaucratic machine in which foreigners played the most important part, foreigners who regarded themselves as far superior to the natives, who did not speak their language and had no intention of learning it '.

That might seem an inference based upon the experiences of contemporary European imperialists rather than upon the recorded sentiments of the illiterate Egyptian peasantry. But the latter's known behaviour is quite consonant with it, and two quotations from newly discovered texts given in the *addenda* afford striking confirmation of the hypothesis. In any case the fate of Ptolemaic economy in the 2nd century is adequately documented. We see the country divided between two groups 'one privileged and largely foreign', the other 'treated as a mere source of revenue'. The bureaucratic machine has 'become indurated and developed an inflexible routine'. All humane edicts of the kings were nullified by the corruption of officials (a corruption which might have been illustrated just as well by texts from the New Kingdom). The Rosetta Stone itself implies in 196 B.C. 'pressure of taxes, rapid accumulation of arrears and the concomitant confiscations, prisons full of criminals and public and private debtors, many fugitives scattered all over the country living by robbery, compulsion applied in every sphere of life'. The natural consequences were 'scarcity of labour, a gradual depopulation of the villages, abandonment of fields, deterioration of land, neglect of dykes and canals'.

In Asia there is less material for assessing either the depth of Hellenization or the intensity of the class division colonization may have produced. Rostovtzeff regards the revolt of Judas Maccabaeus as representing 'the ideals of the large mass of the natives, a class neglected by the government and exploited by the city bourgeoisie'.

In old Greece and Asia Minor similar symptoms are discernible. The author reminds us that the fourth century prior to Alexander had been characterized by two main features—'the lapse of the mass of the population into proletarianism, and a shortage of food-stuffs'. As the principal cause he suggests the tendency of industry to export itself instead of its products, illustrated in the archaeological record by the replacement of pottery, imported from Old Greece in the 6th and 5th centuries into South Russia and Italy, by locally made substitutes and imitations.

Alexander's conquest relieved the situation. The new *poleis* in Asia and Egypt provided an outlet for the surplus population and new markets for the old industrial centres, as the distribution of Greek pottery again illustrates. But once more the products of Old Greece were soon ousted from the new markets by local wares,—the revival in the Orient of native industries fertilized by Greek techniques and methods of organization, and the establishment of

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similar industries in the West and North. In other words the expansion of the external market was only temporary.

Meanwhile the internal market shrank 'owing to the impoverishment of the middle classes'—would it not be more correct to say 'owing to the concentration of purchasing power into fewer and fewer hands'? In any case the position of the proletariat worsened. Piracy and wars, waged with such fury that whole populations were enslaved, replenished the slave market. No wonder that 'tarachai' (demands for cancellation of debts and re-division of the land) became more frequent than ever. And from 134 we hear for the first time in antiquity of formidable slave revolts—Attica, Delos, Pergamon, Macedonia, Italy, Sicily.

The principal beneficiaries of the improvements of the Hellenistic Age had in fact been the 'bourgeoisie'; 'landowners whose land was tilled by tenants, hired hands or slaves; tenant farmers employing the labour of the latter classes; owners of workshops, directing their employees, slaves or freemen; owners or tenants of shops, ships and warehouses; money-lenders and slave-hirers'. Rostovtzeff points out that in Cos and all over Greece the number of peasants who farmed their own land was declining, to make room for capitalistic farms. Many of the citizens of Priene, whose houses we admire so much, must have lived on the proceeds of such. None of the Hellenistic 'contractors at Delos worked himself as those of Athens, Delphi and Epidaurus had done in the 5th and early 4th centuries'.

To this bourgeoisie Rostovtzeff is very sympathetic. He does not ask how far the decline of Hellenistic economy—here frankly depicted—was due to the fundamental antinomy between city and country, bourgeoisie and working-class, on which he himself insists. Now the radical economic innovations of the Iron Age, most fully realized in Greece, had been on the one hand the emergence of industry producing popular consumption goods, on the other the emancipation of the small peasant and the small craftsman due to cheap iron tools and consummated by the introduction of small change in the 6th century. At least in the democracies of the 6th and 5th centuries the latter constituted a potential internal market for the former.

Was it the replacement of the small workshop by the *ergasterion* manned by slaves, of the peasant holding by the capitalist farm that destroyed the internal market? In other words do not the economic and social evils so tragically manifest in Hellenistic times result directly from tendencies at work in Classical Greece, from the moment the cities grew rich enough to afford slaves in any numbers? When 'the limits of the oikoumene had been reached' by the Roman enlargement of the Hellenistic economic system, the issue became inescapable and has been raised by Rostovtzeff himself. But is it necessary to wait till the time of Hadrian to raise it?

V. GORDON CHILDE.

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BULLETIN OF THE AMERICAN SCHOOL OF PREHISTORIC RESEARCH, No. 15, May 1939. *Edited by* GEORGE GRANT MACCURDY, *Director. Office of the School, Old Lyme, Conn., U.S.A. pp. 126, illustrated.*

The School's expedition of 1938, here recorded, was led by Miss (now Professor) Dorothy Garrod, assisted by James H. Gaul and Bruce Howe of Harvard University. Its aim was to find Palaeolithic sites in Anatolia, but the obtaining of the necessary Turkish official authorization delayed reconnaissance, and expectation of a like delay over getting leave to excavate on the most hopeful site (Tuz Gölü) eventually decided Miss Garrod, with the hot weather coming on, to abandon the idea of immediate further work. The reconnaissance is carefully reported, with map and photographs, and the few finds of implements, fossil bones, and Chalcolithic and later 'hüyük' pottery duly published (the latter by Gaul). One must hope that the start so made will have some more fruitful sequels in the course of time.

The expedition then moved to Bulgaria, where the Editor of *ANTIQUITY* had advised Miss Garrod of the existence of many likely-looking caves. Here there were no permit difficulties and the party were soon beginning trial operations at the cave of Bacho Kiro, in the Stara Planina or Balkan mountains near Drénovo, whence Upper Palaeolithic flints and cave-bear bones had been obtained by the local spelaeologist D. Bachev. The cave was mapped, and consideration of the problem presented by Bachev's finds, which had come from deep in the extensive inner galleries, leads to the hypothesis (presented by Howe) that this material was redeposited from elsewhere in the cave by the action of water. The implements are finely-worked pointed blades, and seem to be some kind of Solutrian, but the industry was not present in the stratified deposits trenched by the expedition itself. These were directly inside the cave mouth, and yielded a sequence of eleven strata, of which the lowest two (L, K) were Mousterian, with implements mainly in quartzite. The next (J) opened the Upper Palaeolithic series with a 'Middle' Aurignacian industry, in flint, with typical rostrate and rounded scrapers; above it was something like a metre of sterile sand and cave-earth, but the next two strata (F, E) produced what is probably a retarded facies of the same culture (not Gravettian), and the two next (D, C) one still Upper Palaeolithic but not more closely definable.

An exhaustive and most carefully detailed report on the fauna (with interesting remarks on Pleistocene horses) is contributed by Dr R. Popov, Director of the National Museum at Sofia, who was the first to recommend the expedition to Bacho Kiro.

The clear and beautifully illustrated main report is followed by Miss Garrod's comparative observations on the finds, which with all their scholarly caution make it clear how much Palaeolithic studies should owe in the future to

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extended excavation in the Balkans. The primary place of the 'Middle' Aurignacian in the Upper Palaeolithic sequence of this region is of course in happy accord with her thesis of its entry into Europe this way from Hither Asia, first given in her British Association address of 1936 (republished in 1938 in the *Proceedings of the Prehistoric Society*). If the American School is able to send further expeditions to this quarter after the war, more light on the advent of Upper Palaeolithic man in Europe seems bound to follow.

C. F. C. HAWKES.

ON DATING OLD HORSE-SHOES. By GORDON WARD. *Hull Museum Publications*, no. 205, 1939. pp. I-V, 140-177, 8 plates.

In this pamphlet, reprinted from *Transactions of the Lancashire and Cheshire Antiquarian Society*, LIII, Dr Gordon Ward describes the Hull Museums' collection of ancient horse-shoes, and puts forward a standard or 'scheme' by which the age of old horse-shoes may be judged. The illustrations are good and the material presented useful for its own sake; the author's style is brisk and trenchant, and his 'scheme' certainly marks some advance in the matter. For the Saxon and Norman periods, for instance, he is more cautious than his pioneer predecessor Dr R. W. Murray, to whom he nevertheless owes much. But for all that he may be over-bold. His classing of the type of shoe with counter-sunk nail-holes and 'wavy' outline as a 'Celtic or Romano-British group', the 'Iron Age Horse-shoe' of his subsequent paper in the *Antiquaries Journal* (Jan. 1941) XXI, 9-27, has been shown by Major Ward Perkins (*ibid.* April, 144-9), to be open to serious question; this type lasted well into the Middle Ages, and there is at present only one effective first-century example (that from Colchester). His classification as a whole remains coherent and often cogent, and will certainly be of use when someone undertakes a further study of this rather tantalizing subject. Mr T. Sheppard of the Hull Museums contributes a foreword illustrating and discussing the Romano-Celtic hippo-sandal, perhaps really a hobble to prevent horses from straying.

C. F. C. HAWKES.

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